EPA/ROD/R10-91/027
1991

EPA Superfund
Record of Decision:

COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS
EPA ID: WAD980726368
OU 21
PIERCE COUNTY, WA
12/31/1990

- OU 02 - ASARCO TACOMA SMELTER
- OU 03 - TACOMA TAR PITS
- OU 04 - ASARCO OFF-PROPERTY (RUSTON/TACOMA)
- OU 05 - CB N/T SOURCES
- OU 06 - ASARCO SEDIMENTS
- OU 07 - ASARCO DEMOLITION

THE CB N/T OPERABLE UNITS HAVE BEEN DESIGNATED BY EPA OVER THE COURSE OF SEVERAL YEARS IN RESPONSE TO CHANGING PROJECT NEEDS AS THE AGENCIES DEVELOP A BETTER UNDERSTANDING OF THE OVERALL CB N/T SITE. THE NUMBERING SEQUENCE USED TO IDENTIFY EACH OPERABLE UNIT IS SIMPLY CHRONOLOGICAL, AND DOES NOT REFLECT PRIORITIES.

SCOPE OF CURRENT WORK:

OU 07. ASARCO DEMOLITION - THE DEMOLITION OF STRUCTURES ON THE ASARCO SMELTER FACILITY ADDRESSED BY THIS RECORD OF DECISION IS THE INITIAL STEP FOR THIS OPERABLE UNIT. THIS ROD PROVIDES FOR DEMOLITION OF STRUCTURES AND THE SMELTER STACK, TEMPORARY STORAGE OF DEMOLITION DEBRIS ON SITE, INCINERATION OF UNCONTAMINATED WOOD DEBRIS IN A MODIFIED INCINERATOR ON SITE AND THE PARTIAL CONTROL OF OFF-SITE SURFACE WATERS.

OTHER RELATED ACTIVITIES:

OU 01. NEARSHORE/TIDEFLATS SEDIMENTS - THE EVALUATION AND CLEANUP OF 10 TO 12 SQUARE MILES OF SHALLOW WATER SHORELINE LOCATED IN THE ACTIVE COMMERCIAL SEAPORT OF THE CITY OF TACOMA ARE BEING ADDRESSED IN THIS OPERABLE UNIT. THE MARINE BOUNDARIES OF THIS OPERABLE UNIT ARE LIMITED TO THE SHORELINE, INTERTIDAL AREAS, BOTTOM SEDIMENTS, AND WATER OF DEPTHS LESS THAN 60 FEET BELOW MEAN LOW WATER. A ROD THAT SELECTED THE REMEDY FOR REMEDIATION OF SEDIMENTS IN EIGHT PROBLEM AREAS WAS ISSUED BY EPA ON SEPTEMBER 30, 1989. EPA IS THE LEAD AGENCY FOR IMPLEMENTATION OF THE CLEANUP FOR THIS OPERABLE UNIT. CLOSELY RELATED TO THIS UNIT IS OU 05, CB N/T SOURCES, WHICH IS DESIGNED TO IDENTIFY AND CONTROL SOURCES OF CONTAMINATION IN THE MARINE ENVIRONMENT. THE REMEDY FOR OU 05 WAS ALSO SELECTED IN THE SEPTEMBER 30, 1989 ROD. THE WASHINGTON DEPARTMENT OF ECOLOGY IS THE LEAD AGENCY FOR THE SOURCE CONTROL OPERABLE UNIT. THE PUYALLUP TRIBE IS A SUPPORTING AGENCY FOR CONTINUING RESPONSE ACTIONS WITH A PARTICULAR FOCUS ON NATURAL RESOURCE ISSUES AND IMPLEMENTATION OF THE FEDERAL PUYALLUP TRIBE OF INDIANS SETTLEMENT ACT OF 1989 (P.L. 101-41) AND THE STATE OF WASHINGTON'S PUYALLUP TRIBAL CLAIMS SETTLEMENT (CH. 4, LAWS OF 1989 1ST EX. SESS.). OTHER NATURAL RESOURCE TRUSTEES ARE THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), DEPARTMENT OF INTERIOR, STATE OF WASHINGTON AND THE MUCKLESHOOT TRIBE OF INDIANS.

OU 02. ASARCO TACOMA SMELTER - CONTAMINATION AT THE ASARCO TACOMA SMELTER FACILITY IS BEING ADDRESSED BY THIS OPERABLE UNIT. INITIAL SITE STABILIZATION ACTIVITIES REMOVING THE MOST CONTAMINATED STRUCTURES, BUT NOT INCLUDING THE STACK, IN THE STACK AREA (SEE SITE CHARACTERISTICS AND FIGURE 2) WAS COMPLETED IN 1988. THE INTERIM REMEDIAL WORK ADDRESSED IN OU 07, ASARCO DEMOLITION, WILL BE FOLLOWED BY A SECOND ROD WHICH WILL SELECT THE FINAL REMEDY FOR THE ASARCO TACOMA SMELTER FACILITY, INCLUDING THE FINAL DISPOSAL OF DEMOLITION DEBRIS TO BE TEMPORARILY STORED AT THE SITE. EPA IS THE LEAD AGENCY FOR THE SMELTER OPERABLE UNITS.

OU 03. TACOMA TAR PITS - THIS FORMER COAL GASIFICATION PLANT IS LOCATED IN TACOMA NEAR THE MOUTH OF THE PUYALLUP RIVER. EPA ISSUED A ROD IN DECEMBER 1987 CALLING FOR A COMBINATION OF EXCAVATION AND TREATMENT OF THE MOST HIGHLY CONTAMINATED SOILS, CAPPING OF THE REMAINING AREAS OF THE SITE, AND CONTINUED MONITORING OF GROUNDWATER NEAR THE SITE. THE UNIT IS NOW IN REMEDIAL DESIGN PHASE, WITH REMEDIAL ACTION SCHEDULED TO BEGIN IN 1991 FOR WHICH EPA IS THE LEAD AGENCY.

OU 04. ASARCO OFF-PROPERTY - FEDERAL, STATE AND LOCAL ENVIRONMENTAL AND PUBLIC HEALTH AGENCIES HAVE CONDUCTED EXTENSIVE STUDIES TO DETERMINE THE RISKS ASSOCIATED WITH ARSENIC EXPOSURE IN AREAS SURROUNDING THE ASARCO TACOMA SMELTER. IN MARCH 1989, ASARCO SIGNED A CONSENT ORDER AGREEING TO CONDUCT AN EXPEDITED RESPONSE ACTION (ERA) TO CONTAIN CONTAMINATED SOILS IN 11 PUBLICLY ACCESSIBLE AREAS. WORK BEGAN IN NOVEMBER 1989 TO REMOVE THE TOP LAYER OF CONTAMINATED SOIL AND CAP EACH AREA. EXCAVATED SOILS ARE BEING STORED TEMPORARILY IN THE FINE ORE BINS AT THE ASARCO TACOMA SMELTER FACILITY. AT PRESENT, EPA IS CONDUCTING AN RI/FS FOR THE REMAINING AREAS OF CONCERN AND EXPECTS TO ISSUE A ROD FOR THE REMAINING REMEDIAL WORK IN THIS OPERABLE UNIT IN 1991. EPA IS THE LEAD AGENCY.

OU 05. NEARSHORE/TIDEFLATS SOURCES - THIS OPERABLE UNIT ADDRESSES THE IDENTIFICATION AND CONTROL OF SOURCES OF CONTINUING CONTAMINANT DISCHARGES TO COMMENCEMENT BAY FROM WITHIN THE CITY OF TACOMA. PLANNED REMEDIAL MEASURES FOR THIS UNIT ARE INCORPORATED IN THE NEARSHORE/TIDEFLATS ROD THAT WAS ISSUED IN SEPTEMBER 1989. THE WASHINGTON DEPARTMENT OF ECOLOGY (ECOLOGY) IS THE LEAD AGENCY FOR THIS UNIT.

OU 06. ASARCO SEDIMENTS - ORIGINALLY A PART OF THE NEARSHORE/TIDEFLATS UNIT, THIS AREA (ALSO KNOWN AS THE RUSTON/PT. DEFIANCE SHORELINE PROBLEM AREA) WAS MADE A SEPARATE OPERABLE UNIT IN 1989. AT THE TIME EPA ISSUED THE ROD FOR OU 01, THE CB N/T SEDIMENTS, EPA DETERMINED THAT THE SEDIMENT PROBLEM AREA ASSOCIATED WITH

THE ASARCO FACILITY EXHIBITED DIFFERENT CHARACTERISTICS THAT NEEDED FURTHER STUDY BEFORE REMEDIAL ACTION SELECTION. EPA IS THE LEAD AGENCY AND IS CURRENTLY PREPARING A SUPPLEMENTAL FS FOR THE UNIT.

EPA DECIDED TO TAKE THE EARLY ACTION TO DEMOLISH STRUCTURES AT THE SITE FOR SEVERAL REASONS. FIRST, EVALUATIONS UNDER THE RI/FS WORK AT THE SITE SUGGEST THAT MANY OF THE SITE STRUCTURES ARE CONSTRUCTED OVER CONTAMINATED MATERIALS. REMOVAL OF THE STRUCTURES WILL BE NECESSARY IN ORDER TO FULLY CHARACTERIZE THE NATURE AND EXTENT OF CONTAMINATION AND ULTIMATELY ADDRESS THE CONTAMINATION IN THE FINAL REMEDY FOR THE SITE. THIS ACTION ALSO WILL ELIMINATE THE THREAT OF AN UNCONTROLLED SMELTER STACK COLLAPSE. STUDIES SUBMITTED BY ASARCO INDICATE EVIDENCE OF SERIOUS DETERIORATION OF THE STACK. WEATHERING OF THE CEMENT MORTAR HAS CAUSED THE STACK TO BECOME INCREASINGLY UNSTABLE. THEREFORE, THIS INTERIM REMEDIAL ACTION WILL CONTROL RISKS AT THE SITE WHILE THE RI/FS IS BEING COMPLETED AND IN ADVANCE OF EPA'S SELECTION OF A FINAL REMEDY FOR THE SITE.

FOR THESE REASONS, EPA HAS DETERMINED THAT THE INTERIM ACTIVITIES SELECTED IN THIS ROD WILL CONTRIBUTE TO THE EFFICIENT PERFORMANCE OF THE LONG-TERM REMEDIAL ACTIONS FOR THE SITE. AS THE NCP STATES, SITES SHOULD GENERALLY BE REMEDIATED IN OPERABLE UNITS WHEN EARLY ACTIVITIES ARE NECESSARY OR APPROPRIATE TO ACHIEVE SIGNIFICANT RISK REDUCTION QUICKLY AND TO EXPEDITE COMPLETION OF A TOTAL SITE CLEANUP. BASED ON EVALUATIONS CONDUCTED UNDER THE RI/FS, THIS INTERIM ACTION OPERABLE UNIT IS NEITHER INCONSISTENT WITH NOR WILL IT PRECLUDE IMPLEMENTATION OF ALTERNATIVES BEING EVALUATED FOR THE FINAL REMEDY.

#STC
SITE CHARACTERISTICS

THERE ARE SIX FUNCTIONAL DIVISIONS WITHIN THE SMELTER COMPLEX, EACH USED FOR SPECIFIC PLANT ACTIVITIES DURING ITS OPERATION, AS ILLUSTRATED IN FIGURE 3J. THEY INCLUDE:

- STACK AREA
- PLANT AREA
- COOLING POND
- ADMINISTRATION AREA
- CENTRAL SITE
- LOWER SITE

THE FOLLOWING IS A BRIEF DESCRIPTION OF EACH AREA ON THE SITE.

THE STACK AREA NOW INCLUDES THE 562 FOOT BRICK CHIMNEY STACK, WHICH HAS AN OUTSIDE DIAMETER OF 50 FEET AT THE BASE AND 27 FEET AT THE TOP. A NUMBER OF STRUCTURES PREVIOUSLY IN THIS AREA (ELECTROSTATIC PRECIPITATORS, BAGHOUSE, FLUES, ARSENIC KITCHENS, GODFREY ROASTERS, AND THE METALLIC ARSENIC PLANT) WERE DEMOLISHED DURING THE FIRST SITE STABILIZATION EFFORT IN 1987. THE GROUND IN THIS AREA IS A RELATIVELY STEEP SLOPE STARTING AT THE STACK AND GRADING DOWN INTO A FLAT ZONE IN THE PLANT AREA. THE AREA SOUTH OF THE STACK IS GENTLY SLOPED AND WAS NOT USED FOR PLANT PROCESSES.

THE PLANT AREA INCLUDES THE CONVERTERS, REVERBERATORY FURNACES, AND HERESHOFF ROASTERS. THIS PART OF THE SITE IS RELATIVELY FLAT.

THE COOLING POND AREA WAS ORIGINALLY USED AS A WATER SOURCE FOR COOLING THE ANODES COMING OFF THE ANODE FURNACE. AFTER WATER WAS SPRAYED ONTO THE ANODES, THE CONTAMINATED WATER WAS DRAINED INTO A PIT AND THEN PUMPED BACK TO THE COOLING POND. SINCE THE EARLY 1970'S, THE POND WAS USED ONLY AS A NATURAL DRAINAGE BASIN ON THE SITE. THE POND IS IN A LOW ELEVATION TOPOGRAPHIC AREA THAT RECEIVES RUNOFF FROM ABOUT 45 ACRES OF PROPERTY IN RUSTON AND NORTH TACOMA THAT ARE ADJACENT TO THE SITE.

THE ADMINISTRATION AREA INCLUDES THE MAIN OFFICES, LABORATORY, ENGINEERING BUILDING, AND PARKING LOTS.

THE CENTRAL SITE IS THE TRANSITION ZONE BETWEEN THE UPPER SITE (STACK AND PLANT AREAS) AND THE LOWER SITE. IT INCLUDES THE REFINERY BUILDINGS AND FINE ORE BINS BUILDING. MUCH OF THIS PART OF THE SITE IS PAVED.

THE LOWER SITE, WHICH IS THE NORTHERN BOUNDARY OF THE SITE ALONG THE SHORELINE OF COMMENCEMENT BAY, WAS PRIMARILY A STAGING AND TRANSPORT AREA THAT INCLUDES DOCKING FACILITIES, RAIL LINES, AND A LIMITED NUMBER OF BUILDINGS. IT IS VERY FLAT, PREDOMINANTLY PAVED, AND IS BUILT OVER THE SLAG FILL THAT WAS DEPOSITED OVER THE ORIGINAL SHORELINE.

AS A COPPER SMELTER AND REFINERY, THE PRINCIPAL CONTAMINANTS OF CONCERN AT THE SITE ARE METALS. SPECIFICALLY, THESE METALS INCLUDE ANTIMONY, ARSENIC, CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL AND ZINC. DIMETHYLANILINE (DMA) WHICH WAS USED TO MANUFACTURE LIQUID SULFUR DIOXIDE, HAS BEEN FOUND IN THE GROUNDWATER AT THE SITE.

ARSENIC, CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL, AND ZINC ARE HAZARDOUS SUBSTANCES AS DEFINED IN SECTION 101(14) OF CERCLA.

SOILS AND FILL MATERIAL ON SITE ARE CONTAMINATED WITH A VARIETY OF THE METALS LISTED ABOVE AS WELL AS WITH SOME ORGANIC CHEMICALS SUCH AS POLYAROMATIC HYDROCARBONS AND POLYCHLORINATED BIPHENYLS (PAH'S AND PCB'S). THE ORGANIC CONTAMINATION IS LIMITED TO SMALL AREAS OF THE SITE. THE METALS CONTAMINATION VARIES BOTH HORIZONTALLY OVER THE SITE SURFACE AND WITH DEPTH.

THE MANY BUILDINGS AND STRUCTURES ON SITE VARY IN CONDITION. DUE TO THE NATURE OF PLANT OPERATIONS, ACCUMULATIONS OF DUST ARE PRESENT IN VARYING DEGREES ON BUILDING MATERIALS AND EQUIPMENT IN MANY OF THE BUILDINGS, INCLUDING DUST CONTAMINATED WITH ARSENIC AND OTHER METALS. MOST REUSABLE EQUIPMENT HAS BEEN REMOVED. ASBESTOS-BEARING MATERIALS HAVE BEEN REMOVED FROM MANY OF THE BUILDINGS, UNDER EPA ORDER OR PSAPCA PERMIT.

THE STACK, WHICH IS BUILT OF BRICKS, HAS BECOME SERIOUSLY DETERIORATED, ESPECIALLY IN AREAS NEAR THE TOP OF THE STACK. STUDIES PERFORMED BY ASARCO INDICATE THAT CHIMNEY BANDS ARE BROKEN OR DETERIORATED, THE STACK BULGES FROM THE 540-FOOT ELEVATION TO THE TOP, AND THE LINER HAS FALLEN IN SEVERAL PLACES AND HAS BLISTERS. WEATHERING AND SULFATION OF MORTAR JOINTS HAS ADDED TO THE INSTABILITY OF THE STRUCTURE. ANALYSIS OF BRICK CONTAMINATION FOUND ARSENIC, CADMIUM, COPPER, LEAD, AND ZINC AT SIGNIFICANT LEVELS. THE SAMPLE RESULTS (LETTER FROM MR. THORP, ATTORNEY FOR ASARCO, TO MR. ROSE, EPA PROJECT MANAGER, MAY 11, 1989) ARE AS FOLLOWS:

ARSENIC	21000	PARTS PER MILLION (PPM)
CADMIUM	385	PPM
COPPER	5150	PPM
LEAD	28950	PPM
ZINC	1980	PPM

SURFACE WATER AT THE FACILITY PRESENTS TWO POTENTIAL PATHS OF MIGRATION: DISCHARGE OF CONTAMINATED SURFACE WATER INTO COMMENCEMENT BAY, AND SURFACE WATER RUNNING THROUGH CONTAMINATED SOIL TRANSPORTING CONTAMINANTS TO GROUNDWATER AND OFF SITE. SINCE MUCH OF THE SOILS AND EXPOSED SURFACE AREA OF THE SITE ARE CONTAMINATED, THE MOVEMENT OF SURFACE WATER PICKS UP AND TRANSPORTS CONTAMINANTS. SOME SURFACE WATER FLOWS INTO THE UNLINED COOLING POND WHERE SEDIMENTS SETTLE OUT.

THE AVAILABLE GEOLOGIC AND HYDROGEOLOGIC DATA FROM THE RI/FS INDICATE THE POTENTIAL FOR SURFACE CONTAMINATION TO MIGRATE TO THE WATER TABLE. WATER BALANCE ESTIMATES INDICATE THAT PRECIPITATION FALLS ON THE SITE TO RECHARGE THE GROUNDWATER EVEN THOUGH MUCH OF THE PRECIPITATION FALLS ON PAVED AREAS AND IS COLLECTED BEFORE INFILTRATION INTO THE SUBSURFACE. IN ADDITION, SURFACE WATER RUN-ON FROM PROPERTY NEAR THE SITE AND SURFACE WATER THAT COLLECTS IN THE COOLING POND HAS THE POTENTIAL TO LEACH INTO THE GROUNDWATER. AVAILABLE DATA INDICATE THAT GROUNDWATER BENEATH THE ASARCO FACILITY FLOWS TOWARD COMMENCEMENT BAY.

PRESENTLY, OFF PROPERTY SURFACE WATER RUN ON ENTERS THE SITE AT TWO LOCATIONS. THE MAJORITY OF OFF PROPERTY RUN ON COMES FROM A 45-ACRE AREA WEST OF THE SITE THAT DRAINS INTO A BYPASS CHANNEL AROUND THE COOLING POND, OR INTO THE COOLING POND, AND THEN DISCHARGES TO THE SITE'S MIDDLE OUTFALL TO COMMENCEMENT BAY. THE SECOND LOCATION IS AT THE SOUTH END OF THE SITE ALONG RUSTON WAY. AN OFF-SITE SUB-BASIN DRAINS DOWN THE HILLSIDE, ONTO THE SITE VIA AT LEAST FOUR CULVERTS PASSING UNDER RUSTON WAY, AND DISCHARGES BY ONE OF THE SITE OUTFALLS TO COMMENCEMENT BAY. CURRENTLY THERE ARE THREE NPDES PERMITTED OUTFALLS ON SITE AND TWO STORM WATER OUTFALLS IN THE VICINITY OF THE ASARCO FACILITY. THE NORTHERN AND SOUTHERN MOST OUTFALLS ARE NOT LOCATED ON ASARCO'S PROPERTY AND ARE NOT REGULATED BY NPDES PERMITS. THE THREE NPDES PERMITTED OUTFALLS LOCATED ON THE SITE ARE BETWEEN THESE TWO UNREGULATED OUTFALLS.

THE MAJORITY OF SURFACE WATER RUNOFF ON-SITE IS CHANNELED AND DIRECTED TO THE EXISTING STORM WATER DRAINAGE SYSTEM. RUNOFF IS GENERALLY COLLECTED IN CATCH BASINS, CONVEYED TO THE STORM DRAIN SYSTEM, AND FINALLY DISCHARGED TO COMMENCEMENT BAY THROUGH THREE ON-SITE OUTFALLS THAT WERE PERMITTED UNDER THE NPDES PERMIT SYSTEM WHEN THE FACILITY WAS ACTIVE. ASARCO WAS GRANTED NPDES PERMITS IN 1975 WHICH WERE EXTENDED BY THE DEPARTMENT OF ECOLOGY IN 1980. MONITORING OF SURFACE WATER DISCHARGES FROM THESE OUTFALLS FOUND, BUT DID NOT LIMIT, HIGH CONCENTRATIONS OF TOTAL AND DISSOLVED METALS, INCLUDING ARSENIC AND COPPER, AT LEVELS EXCEEDING WATER QUALITY STANDARDS. THERE ARE INDICATIONS THAT THE INTEGRITY OF THE STORM DRAIN SYSTEM IS FAILING. PART OF THE SURFACE WATER IS ALSO COLLECTED AND SENT TO AN ON-SITE WASTEWATER EVAPORATION SYSTEM. AS PART OF THE FIRST SITE STABILIZATION EFFORT IN 1987, A SURFACE WATER RUNOFF COLLECTION SYSTEM WAS INSTALLED AT THE NEWLY GRADED AREA BELOW THE STACK AND FROM THE ACID PLANT AREA. COLLECTED WATER IS ROUTED TO THE EVAPORATION SYSTEM. WATER CREATED IN DUST SUPPRESSION ACTIVITIES DURING DEMOLITION WILL BE DIVERTED TO THIS ON-SITE SYSTEM.

#SSR
SUMMARY OF SITE RISKS

THE FOLLOWING QUALITATIVE RISK INFORMATION DEMONSTRATES THAT THE ACTIONS CONTEMPLATED BY THIS INTERIM ACTION ARE NECESSARY TO STABILIZE THE SITE AND PREVENT FURTHER DEGRADATION. THIS INTERIM ACTION WILL ADDRESS SITE RISKS AND CLEANUP OBJECTIVES ASSOCIATED WITH BUILDINGS AND STRUCTURES, INCLUDING THE STACK. IN ADDITION, THIS INTERIM ACTION PARTIALLY ADDRESSES THE POTENTIAL RISKS FROM UNCONTROLLED SURFACE WATER RUNOFF BY ADDRESSING OFF-PROPERTY SURFACE WATER RUN ON. THE FINAL ROD WILL FURTHER ADDRESS ON-SITE RUNOFF. THE COMPLETE RI/FS THAT IS ONGOING WILL EVALUATE THE POTENTIAL HAZARDS ASSOCIATED WITH CONTAMINATED SOILS BENEATH OR SURROUNDING THE BUILDINGS AND STACK, FILL MATERIALS, SITE SURFACE WATER, AND GROUNDWATER. A BASELINE RISK ASSESSMENT ADDRESSING SITE-WIDE CONDITIONS IS A PART OF THE OVERALL RI/FS; DRAFT REPORTS ARE PART OF THE ADMINISTRATIVE RECORD. WHEN COMPLETED, THE RI/FS WILL SUPPORT SELECTION OF A FINAL REMEDIAL ACTION FOR THIS OPERABLE UNIT TO ADDRESS THE REMAINING RISKS.

AT THE ASARCO SMELTER FACILITY THERE ARE SEVERAL MIGRATION AND EXPOSURE PATHWAYS OF CONTAMINANTS WHICH WILL BE PARTIALLY ADDRESSED BY THIS INTERIM REMEDIAL ACTION. BECAUSE THIS WAS A COPPER SMELTING FACILITY, THE CONTAMINANTS OF CONCERN INCLUDE ARSENIC, OTHER METALS AND BYPRODUCTS OF THE COPPER SMELTING PROCESS THAT ARE PRESENT AT THE SITE IN SOILS AND FILL MATERIALS, IN DUST ON OR WITHIN BUILDINGS, AND IN BUILDING MATERIALS. MANY OF THESE CONTAMINANTS ARE TOXIC TO HUMANS AND AQUATIC LIFE INCLUDING:

ARSENIC

THE ADVERSE HEALTH EFFECTS FROM EXPOSURE TO ARSENIC HAVE BEEN CONFIRMED IN NUMEROUS PUBLIC HEALTH AND SCIENTIFIC STUDIES. ARSENIC CAN CAUSE A VARIETY OF TOXIC EFFECTS IN HUMANS WITH THE TYPE AND SEVERITY OF EFFECTS DEPENDING UPON THE LEVEL OF EXPOSURE AND FORM OF ARSENIC. INORGANIC ARSENIC IS A HUMAN POISON AND LARGE DOSES CAN CAUSE DEATH. HUMAN EXPOSURE TO LOWER LEVELS OF ARSENIC HAS RESULTED IN INJURY TO A NUMBER OF BODY TISSUES AND ORGANS, INCLUDING THE LIVER, KIDNEYS, NERVOUS SYSTEM, SKIN, AND AN INCREASED RISK OF DEVELOPING LUNG AND SKIN CANCERS. THIS INCREASED RISK OF LUNG CANCER HAS BEEN OBSERVED IN NUMEROUS STUDIES OF WORKERS WHO INHALED ARSENIC IN SMELTERS AND IN A PESTICIDE PLANT. INCREASED INCIDENCE OF SKIN CANCERS HAVE BEEN FOUND IN PEOPLE WHO HAVE CONSUMED DRINKING WATER CONTAMINATED WITH ARSENIC (FOR EXAMPLE, IN TAIWAN AND MEXICO) AND IN THOSE WHO USED MEDICINES CONTAINING ARSENIC.

ANTIMONY

ANTIMONY EXPOSURE HAS BEEN ASSOCIATED WITH AN INCREASE IN LUNG CANCER. ANIMAL STUDIES YIELDED SUGGESTIVE EVIDENCE THAT ANTIMONY TRIOXIDE CAUSES LUNG AND LIVER TUMORS. FEMALE WORKERS EXPOSED TO ANTIMONY COMPOUNDS HAD AN INCREASED INCIDENCE OF GYNECOLOGICAL DISORDERS AND SPONTANEOUS ABORTION.

CADMIUM

CADMIUM IS RELATIVELY MOBILE IN THE AQUATIC ENVIRONMENT. CADMIUM IS A KNOWN CARCINOGEN TO ANIMALS, AND POTENTIALLY TO HUMANS, EXPOSED BY INHALATION. THERE IS EVIDENCE LINKING CADMIUM WITH CANCER OF THE PROSTATE IN HUMANS.

STUDIES SUGGEST THAT CADMIUM MAY HAVE ADVERSE EFFECTS ON REPRODUCTION IN FISH AT LEVELS PRESENT IN LIGHTLY TO MODERATELY POLLUTED WATERS.

CHROMIUM

HEXAVALENT CHROMIUM (CR IV) IS RATHER SOLUBLE AND IS QUITE MOBILE IN GROUNDWATER AND SURFACE WATER. IN THE PRESENCE OF REDUCING AGENTS IT IS RAPIDLY CONVERTED TO TRIVALENT CHROMIUM (CR III), WHICH IS STRONGLY ADSORBED TO SOIL COMPONENTS AND CONSEQUENTLY IS MUCH LESS MOBILE. SOURCES OF CHROMIUM IN AIR INCLUDE WINDBLOWN SOIL AND PARTICULATE EMISSIONS FROM INDUSTRIAL PROCESSES. INHALATION OF CR VI SALTS CAUSES IRRITATION AND INFLAMMATION OF THE NASAL MUCOSA, AND ULCERATION AND PERFORATION OF THE NASAL SEPTUM. HEXAVALENT CHROMIUM CAUSES KIDNEY DAMAGE IN ANIMALS AND HUMANS. THE LIVER IS ALSO SENSITIVE TO THE TOXIC EFFECTS OF CR IV, BUT LESS SO THAN THE KIDNEYS OR RESPIRATORY SYSTEM.

CR III APPEARS TO BE MORE ACUTELY TOXIC TO FISH THAN CR VI; THE REVERSE IS TRUE IN LONG TERM CHRONIC EXPOSURE STUDIES.

COPPER

BECAUSE COPPER COMPOUNDS AND COMPLEXES ARE READILY SOLUBLE, COPPER IS VERY MOBILE IN SOIL AND OTHER SURFACE ENVIRONMENTS, AND IS ADSORBED TO ORGANIC MATTER, CLAYS, AND OTHER MATERIALS. IT IS TOXIC TO HUMANS AT HIGH LEVELS CAUSING IRRITATION FOLLOWING ACUTE EXPOSURE AND ANEMIA FOLLOWING CHRONIC EXPOSURE. EXPOSURE TO METALLIC COPPER DUST CAN CAUSE A SHORT-TERM ILLNESS THAT IS CHARACTERIZED BY CHILLS, FEVER, ACHING MUSCLES, DRYNESS OF MOUTH AND THROAT, AND HEADACHE. COPPER IS VERY TOXIC TO AQUATIC ORGANISMS.

LEAD

THERE IS SUGGESTIVE EVIDENCE THAT SOME LEAD SALTS ARE CARCINOGENIC, INDUCING KIDNEY TUMORS IN MICE AND RATS. EXPOSURE TO LEAD HAS BEEN LINKED TO REPRODUCTIVE RISK AND IT CAN ADVERSELY AFFECT THE BRAIN AND CENTRAL NERVOUS SYSTEM. CHRONIC EXPOSURE TO LOW LEVELS OF LEAD CAN CAUSE SUBTLE LEARNING DISABILITIES IN CHILDREN. EXPOSURE TO LEAD CAN ALSO CAUSE KIDNEY DAMAGE AND ANEMIA, AND IT MAY HAVE ADVERSE EFFECTS ON THE IMMUNE SYSTEM.

NICKEL

IN A NUMBER OF EPIDEMIOLOGICAL STUDIES, OCCUPATIONAL EXPOSURE TO NICKEL COMPOUNDS HAS BEEN ASSOCIATED WITH EXCESS CANCER OF THE LUNG AND NASAL CAVITY. SEVERAL NICKEL COMPOUNDS ARE MUTAGENIC AND CAN CAUSE CELL TRANSFORMATION. IN HUMANS, NICKEL AND NICKEL COMPOUNDS CAN CAUSE A SENSITIZATION DERMATITIS. THE CHRONIC TOXICITY OF NICKEL TO AQUATIC ORGANISMS IS HIGH.

ZINC

INGESTION OF EXCESSIVE AMOUNTS OF ZINC MAY CAUSE FEVER, VOMITING, STOMACH CRAMPS, AND DIARRHEA. HIGH LEVELS OF ZINC IN THE DIET HAVE BEEN SHOWN TO ALSO RETARD GROWTH AND PRODUCE DEFECTIVE MINERALIZATION OF BONE. ZINC MAY BE INDIRECTLY IMPORTANT WITH REGARD TO CANCER SINCE ITS PRESENCE SEEMS TO BE NECESSARY FOR THE GROWTH OF TUMORS. (1)

(1) REFERENCED CHEMICALS SITED FROM: US ENVIRONMENTAL PROTECTION AGENCY (USEPA). 1985. CHEMICAL, PHYSICAL, AND BIOLOGICAL PROPERTIES OF COMPOUNDS PRESENT AT HAZARDOUS WASTE SITES. OFFICE OF WASTE PROGRAMS ENFORCEMENT (OWPE), WASHINGTON, DC.

EXPOSURE PATHWAYS

THE EXISTING BUILDINGS AND STRUCTURES CONTAIN DUST AND BUILDING MATERIALS CONTAMINATED FROM EXPOSURE TO INDUSTRIAL ACTIVITIES AT THE SITE. AIR MOVEMENT CAN RELEASE PARTICULATE MATTER WHICH MAY BE TRANSPORTED OFF SITE BY WINDS. PARTICULATE MATTER CAN ALSO SETTLE TO THE GROUND AND CONTAMINATE SOILS AND DUSTS OFF SITE. PEOPLE CAN BE EXPOSED BY INHALING OR INGESTING CONTAMINATED PARTICULATE MATTER. CONTAMINATED BUILDING MATERIALS MAY PRESENT RISKS FROM DIRECT CONTACT.

THE SMELTER STACK PRESENTS ADDITIONAL RISKS. EVALUATIONS OF THE STACK'S STRUCTURAL INTEGRITY FOUND SERIOUS DETERIORATION. THE RESULTS OF A FIELD INVESTIGATION BY ASARCO'S CONSULTANT, WHICH WAS PRESENTED IN DETAIL IN AN ENGINEERING REPORT PREPARED IN 1986 BY INDUSTRIAL CHIMNEY, INC. (SITE STABILIZATION PLAN, PHASE II, APPENDIX C) INDICATES THAT THE STACK, PARTICULARLY THE UPPER SECTION, HAS DETERIORATED CONSIDERABLY BECAUSE OF WEATHER AND SULFATION OF THE MORTAR JOINTS. IF THE STACK WAS TO FALL WITHOUT CONTROLS THERE WOULD BE A SUBSTANTIAL RISK OF INJURY OR DEATH FOR THE ON-SITE PERSONNEL AND THE CLOSELY LOCATED RESIDENCES. IN ADDITION, EXPOSURE FROM INHALATION OF STACK CONTAMINANTS RELEASED INTO THE AIR DURING AN UNCONTROLLED STACK COLLAPSE COULD OCCUR FOR BOTH ON-SITE PERSONNEL AND PEOPLE LIVING IN THE COMMUNITY (APPROXIMATELY 35 HOMES ARE WITHIN 1000 FEET OF THE STACK). THE CONTAMINANTS ALSO COULD SETTLE IN THE NEARBY RESIDENTIAL AREAS, AND PRESENT RISKS FROM DIRECT CONTACT OR INGESTION, AND FROM INHALATION OF RESUSPENDED SOILS AND DUSTS.

A SIGNIFICANT PORTION OF THE SURFACE WATER AT THE SITE FLOWS INTO THE SITE FROM THE 45-ACRE OFF-PROPERTY DRAINAGE BASIN TO THE WEST OF THE ASARCO PROPERTY. MUCH OF THE SURFACE WATER RUNOFF ENTERS STORM WATER DRAINAGE CONDUITS EXISTING AT THE SITE, WHICH DISCHARGE TO COMMENCEMENT BAY VIA THREE OUTFALLS. HOWEVER, THE INTEGRITY OF PORTIONS OF THE DRAINAGE SYSTEM IS IN DOUBT. SEVERAL OBSERVATIONS BASED ON DRAINAGE FLOWS SUGGEST THAT SURFACE WATERS ARE ENTERING THE GROUNDWATER VIA BREAKS IN THE SYSTEM. THUS, THE SITE EVALUATION INDICATES THAT CONTAMINATION IN SURFACE WATER AT THE SITE IS BEING TRANSPORTED TO GROUNDWATER. MUCH OF THIS CONTAMINATED GROUNDWATER BENEATH THE FACILITY FLOWS TOWARD COMMENCEMENT BAY AND MAY BE EXCEEDING EPA'S WATER QUALITY CRITERION AND THE STATE'S WATER QUALITY STANDARDS. THIS MAY RESULT IN RISKS TO AQUATIC LIFE AND TO HUMANS WHO MAY BE EATING AQUATIC LIFE FROM COMMENCEMENT BAY.

ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE INTERIM RESPONSE ACTIONS SELECTED IN THIS ROD, MAY PRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT.

#DOA
DESCRIPTION OF ALTERNATIVES

THE SCOPE OF THE INTERIM REMEDIAL ACTION AT THE ASARCO SITE IS LIMITED AND FEW ALTERNATIVES WERE EVALUATED. FOR ONE OF THE ACTIONS, THE REMOVAL OF EXISTING BUILDINGS AND STRUCTURES OTHER THAN THE STACK, EPA CONSIDERED ONLY CONVENTIONAL TRADE AND PROTECTIVE TECHNIQUES TO DISMANTLE AND DEMOLISH BUILDINGS (SEE SECTION A BELOW, "STRUCTURE DEMOLITION"). ALTHOUGH THE EVALUATION OF APPROACHES FOR DEMOLISHING THE STACK ANALYZED SEVERAL ALTERNATIVES, ONLY ONE APPROACH WAS CONSIDERED EFFECTIVE AND IMPLEMENTABLE DUE TO THE HEIGHT OF THE STACK AND LACK OF STABILITY (SEE SECTION B BELOW, "ALTERNATIVES FOR STACK DEMOLITION"). SEVERAL OPTIONS FOR DISPOSAL OF

DEBRIS WERE CONSIDERED, BUT THE DECISION FOR PERMANENT DISPOSAL OF MATERIAL THAT CANNOT BE REUSED, RECYCLED OR BURNED ON SITE WILL BE MADE IN THE FINAL ROD FOR OPERABLE UNIT 02, ASARCO TACOMA SMELTER. ONLY ONE APPROACH TO DIVERT SURFACE WATER FROM FLOWING ON-SITE WAS DEVELOPED IN THE DRAFT FEASIBILITY STUDY. DESCRIPTIONS OF THE ALTERNATIVES FOLLOW.

STRUCTURE DEMOLITION

NO ACTION

THE SUPERFUND PROGRAM REQUIRES THAT THE "NO-ACTION" ALTERNATIVE BE CONSIDERED AT EVERY SITE IN ADDITION TO A RANGE OF TREATMENT AND CONTAINMENT ALTERNATIVES. "NO ACTION" WOULD MEAN THAT THE STRUCTURES WOULD NOT BE REMOVED THEREBY IMPEDING THE SAMPLING AND ANALYSIS NECESSARY TO COMPLETE THE RI/FS. "NO ACTION" AND ALSO WOULD RESULT IN CONTAMINANTS REMAINING ON-SITE WHICH COULD BE RESUSPENDED AND RELEASED OFF SITE.

CONVENTIONAL DEMOLITION

ALL BUILDINGS INDICATED IN SECTIONS 2-10, SEE FIGURES 3A-I, WILL BE DEMOLISHED OR DISMANTLED BY CONVENTIONAL AND PROTECTIVE METHODS. IN AN EFFORT TO BE CONSISTENT, THE AREAS AND SPECIFIC BUILDINGS AFFECTED ARE SUMMARIZED IN APPENDIX V USING THE NUMBERS AND ORDER ASSIGNED TO THEM IN THE SITE STABILIZATION PLAN. HOWEVER, THE BUILDINGS WILL NOT NECESSARILY BE DEMOLISHED OR DISMANTLED IN THE ORDER LISTED IN APPENDIX V. THE ORDER FOR DEMOLITION WILL BE BASED ON ACCESS NEEDS FOR FURTHER SAMPLING, AND OTHER ON-SITE CONSIDERATIONS.

PRIOR TO DEMOLITION, BUILDINGS AND STRUCTURES WILL BE VACUUMED AND WASHED TO REMOVE DUST, AND ASBESTOS-CONTAINING MATERIALS WILL BE REMOVED. PROPER NOTIFICATION PROCEDURES, IN ACCORDANCE WITH THE ASBESTOS NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP), WILL BE FOLLOWED. AREAS OF STRUCTURES CONTAINING DUST THAT ARE INACCESSIBLE FOR VACUUMING WILL BE WASHED DOWN TO CURTAIL DUST EMISSIONS. DURING DEMOLITION, DUST SUPPRESSION MEASURES USING HIGH PRESSURE WATER FOGGING AND MISTING DEVICES WILL BE UTILIZED TO CONTROL THE RELEASE OF DUST AND PARTICULATES. CONTAINMENT SYSTEMS TO COLLECT WATER FROM THE DUST SUPPRESSION MEASURES WILL COLLECT THE WASTE WATER AND ROUTE THE WASTE WATER TO THE EVAPORATION SYSTEM. THESE SYSTEMS WILL MEET EPA REQUIREMENTS.

THIS ROD DOES NOT CALL FOR THE DEMOLITION OF CERTAIN STRUCTURES. SOME OF THESE STRUCTURES, SUCH AS THOSE IN SECTION 9, WILL REMAIN FOR CONTINUED STORAGE AND OTHERS, SUCH AS THOSE IN SECTION 5, WILL REMAIN TO ACT AS RETAINING WALLS FOR TERRACED PORTIONS OF THE SITE. STRUCTURES NOT LISTED IN APPENDIX V WILL BE VACUUMED, EMPTIED AND WASHED DOWN. FOOTINGS, PADS, AND OTHER SUPPORT STRUCTURES FOR SOME OF THE DISMANTLED BUILDINGS WILL REMAIN ON SITE UNTIL THE FINAL REMEDY IS SELECTED. THE FOLLOWING IS A LIST OF THE BUILDINGS, AS REPRESENTED IN THE SITE STABILIZATION PLAN, THAT WILL REMAIN ON SITE AFTER DEMOLITION ACTIVITIES ARE FINISHED.

SECTION 4: SOUTHERN DOCK

SECTION 6: CENTRAL DOCK (COPPER DOCK); NORTHERN DOCK

SECTION 5: NORTHEAST PORTION OF ANODE FURNACES BUILDING; SMALL PORTION OF THE ROOF ADJACENT TO THE ANODE FURNACE AREA; PORTION OF THE WEST WALL IN NO. 3 REFINERY BUILDING

SECTION 7: FINE ORE BINS BUILDING, TRESTLES AND CONVEYOR GALLERIES

SECTION 8: TRANSFORMER HOUSES; TACOMA CITY LIGHT SUBSTATION

SECTION 9: ACID STORAGE TANKS; SETTLING TANKS; EVAPORATION BASIN

ALTERNATIVES FOR STACK DEMOLITION

FOR SECTION 1 (SEE FIGURE 3K), THE SMELTER STACK, FIVE DEMOLITION TECHNIQUES, AND TWO OTHER ALTERNATIVES, WERE EVALUATED. THREE OF THE TECHNIQUES INVOLVED DIFFERENT TYPES OF MANUAL DEMOLITION WITH THE USE OF SCAFFOLDING EQUIPMENT. ALSO EVALUATED WERE MECHANICAL DEMOLITION, WITH A CRANE AND HEAVY METAL BALL, EXPLOSIVE DEMOLITION, BY IMPLOSION, CLEANING THE STACK AND NO ACTION.

NO ACTION

THE SUPERFUND PROGRAM REQUIRES THAT THE "NO-ACTION" ALTERNATIVE BE CONSIDERED AT EVERY SITE IN ADDITION TO A RANGE OF TREATMENT AND CONTAINMENT ALTERNATIVES. NO ACTION FOR DEMOLITION OF THE STACK WOULD NOT STABILIZE THE DETERIORATING STACK NOR ALLEVIATE THE THREAT OF UNCONTROLLED COLLAPSE (SEE SECTION IV ABOVE, "SUMMARY OF SITE RISKS").

CLEANING THE STACK

WASHING OR ENCAPSULATING THE INSIDE OF THE STACK COULD POSSIBLY CONTAIN DUST AND PREVENT AIR RELEASES. HOWEVER, THIS APPROACH WOULD NOT ELIMINATE ALL OF THE RISKS FROM AN UNCONTROLLED COLLAPSE POSED BY THE DETERIORATING STACK. A STUDY, COMPLETED BY INDUSTRIAL CHIMNEY, INC., IDENTIFIED NO PRACTICAL METHOD FOR WASHING THAT WOULD ELIMINATE CONTAMINATION.

MANUAL TECHNIQUES

SEVERAL TECHNIQUES FOR MANUALLY DISMANTLING THE STACK WERE EVALUATED. ALL APPROACHES WERE REJECTED BECAUSE THEY ARE NOT TECHNICALLY FEASIBLE FOR A CHIMNEY STRUCTURE THAT IS 562 FEET HIGH. POLE SCAFFOLDING IS PREFABRICATED OUT OF METAL TUBING AND SECURED TO THE OUTSIDE OF THE STACK. POLE SCAFFOLDINGS FOR HEIGHTS OVER 125 FEET MUST BE DESIGNED SPECIFICALLY FOR THE PROJECT. CURRENTLY THERE ARE NO SPECIFICALLY DESIGNED POLE SCAFFOLDINGS THAT HAVE EXCEEDED 250 FEET, AND IT IS EXPECTED THAT THIS IS AN UPPER LIMIT, ACCORDING TO INDUSTRIAL CHIMNEY, INC. OUTRIGGER SCAFFOLDING IS ATTACHED DIRECTLY TO THE STACK USING CABLES WRAPPED AROUND THE STACK. TO USE THIS METHOD SAFELY APPROXIMATELY 60 FEET OF THE UPPER STACK WOULD NEED TO BE REINFORCED. A SECOND LAYER OF BOARD AND CABLES WOULD THEN BE REQUIRED AT EACH SCAFFOLDING LEVEL. MECHANICAL SCAFFOLDING IS SIMILAR TO THAT USED BY WINDOW WASHERS ON HIGH-RISE BUILDINGS. THE SCAFFOLD IS SUPPORTED BY HANGERS (STIRRUPS) AT TWO POINTS, SUSPENDED FROM OVERHEAD SUPPORTS TO PERMIT THE RAISING OR LOWERING. BECAUSE THE UPPER PORTION OF THE STACK IS NOT SECURE, THIS TECHNIQUE IS NOT TECHNICALLY FEASIBLE.

MECHANICAL TECHNIQUE

MECHANICAL DEMOLITION INVOLVES THE USE OF A CRANE AND HEAVY STEEL BALL TO BATTER THE STACK INTO PIECES. THIS TECHNIQUE IS NOT FEASIBLE FOR THE STACK SINCE A TYPICAL HEIGHT LIMIT FOR THIS TYPE OF DEMOLITION IS AROUND 100 FEET.

EXPLOSIVE DEMOLITION (IMPLOSION)

CONTROLLED EXPLOSIVE DEMOLITION USING IMPLOSION INVOLVES DRILLING HOLES IN THE BASE OF THE STACK AND PLACING EXPLOSIVES IN THESE HOLES. THIS METHOD HAS BEEN USED EXTENSIVELY ON STACKS IN THE PAST. PRIOR TO DEMOLITION, THE INTERIOR OF THE STACK IS ENCAPSULATED TO MINIMIZE THE RELEASE OF SOOT AND CONTAMINANTS ON THE SURFACE OF THE LINING. A LINED AND BERMED TRENCH WILL BE CONSTRUCTED AT THE BASE OF THE STACK TO CONTAIN THE FALLING BRICKS AND THE WATER GENERATED FROM THE DUST SUPPRESSION ACTIVITIES (DESCRIBED IN DETAIL IN SECTION IX.B.2.B, “DESCRIPTION OF REMEDIAL COMPONENT").

DISPOSAL OF DEBRIS

VARIOUS TYPES OF DEBRIS WILL BE GENERATED DURING THE DEMOLITION OF STRUCTURES INCLUDING WOOD, STEEL, BRICK, FIBERGLASS, ASBESTOS MATERIALS, FLUE DUST, AND OTHER MISCELLANEOUS MATERIALS. THE FOLLOWING IS A BRIEF REVIEW OF DISPOSAL OPTIONS FOR THE PRIMARY TYPES OF MATERIAL TO BE GENERATED. THIS INTERIM REMEDIAL ACTION RELIES ON ONE ALTERNATIVE FOR THE TEMPORARY STORAGE ON SITE OF ALL HAZARDOUS DEBRIS, AND SEVERAL ALTERNATIVES FOR THE DISPOSAL OF WASTES THAT ARE NOT HAZARDOUS OR DANGEROUS, PENDING SELECTION OF A PERMANENT DISPOSAL REMEDY IN THE FINAL ROD FOR THE SMELTER SITE (2). FEDERAL LAND DISPOSAL RESTRICTIONS (LDR) WILL NOT APPLY TO THE ON-SITE STORAGE WITHIN THE AREA OF CONTAMINATION OF HAZARDOUS WASTE (SEE 53 FR 51444, DECEMBER 21, 1988). OFF-SITE DISPOSAL FOR HAZARDOUS WASTES, SOLID WASTES, FIBERGLASS, AND ASBESTOS MAY BE APPROVED AS A PERMANENT DISPOSAL MEASURE WHERE APPROPRIATE. TO THE EXTENT LDR APPLIES TO THE MATERIALS SHIPPED OFF SITE FOR DISPOSAL WHICH ARE NOT COVERED BY A NATIONAL CAPACITY VARIANCE FOR DEBRIS, THE MATERIALS MUST EITHER COMPLY WITH THE APPLICABLE TREATABILITY STANDARD OR MUST BE THE SUBJECT OF A TREATABILITY VARIANCE. IN ADDITION, MATERIALS MAY BE APPROVED FOR REUSE OR RECYCLING.

(2) HAZARDOUS WASTE IS DEFINED IN 40 CFR SECTION 261.3 AND DANGEROUS WASTE IS DEFINED IN WASHINGTON'S DANGEROUS WASTE REGULATION, WAC 173-303-040 (18).

DISPOSAL OPTIONS FOR MATERIALS OTHER THAN STACK DEBRIS.

TEMPORARY STORAGE OF DEBRIS IN THE FINE ORE BINS UNTIL SELECTION OF A PERMANENT DISPOSAL REMEDY.

THE FINE ORE BINS ARE IN A LARGE BUILDING ON SITE WITH ADEQUATE CAPACITY TO STORE DEBRIS MATERIALS THAT CAN PROTECT MATERIALS FROM PRECIPITATION AND WIND EROSION, AND PREVENT THE MIGRATION OF CONTAMINATION INTO THE ENVIRONMENT. IF STORAGE IN THIS BUILDING WILL MEET THE SUBSTANTIVE REQUIREMENTS FOR WASTE PILE STORAGE, THIS OPTION PROVIDES A COST-EFFECTIVE STORAGE SOLUTION UNTIL THE PERMANENT DISPOSAL REMEDY IS SELECTED (SEE FOOTNOTE 5 BELOW).

DISPOSAL AT AN OFF-SITE FACILITY OPERATING IN COMPLIANCE WITH APPLICABLE FEDERAL AND STATE REQUIREMENTS.

DEMOLITION DEBRIS CAN BE SHIPPED OFF SITE FOR DISPOSAL IN AN APPROPRIATE FACILITY, DEPENDING ON THE NATURE OF

CONTAMINATION. ALL MATERIAL WOULD UNDERGO A WASTE ANALYSIS PRIOR TO SHIPMENT OFF SITE. EPA WOULD ENSURE THAT ANY OFF-SITE DISPOSAL DESTINATION IS OPERATING IN COMPLIANCE WITH APPLICABLE FEDERAL OR STATE LAWS AND EPA'S OFF SITE DISPOSAL POLICY BEFORE THE MATERIAL IS SHIPPED. HAZARDOUS WASTE MUST BE DISPOSED OF AT A HAZARDOUS WASTE DISPOSAL FACILITY; DANGEROUS WASTE WOULD BE DISPOSED OF IN AN APPROPRIATE FACILITY. (SEE PAGE 17, FOOTNOTE 1). THE APPROPRIATE FACILITY WOULD DEPEND ON WHETHER THE DISPOSAL SITE IS IN THE STATE OF WASHINGTON, AND WHETHER THE WASTE IS ALSO A HAZARDOUS WASTE. ASBESTOS-CONTAINING MATERIALS WILL BE DISPOSED AT A FACILITY OPERATING IN ACCORDANCE WITH NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) REGULATIONS AND APPLICABLE STATE LAW. WASTE MATERIALS THAT QUALIFY AS SOLID WASTE ONLY MAY BE SHIPPED OFF-SITE FOR DISPOSAL AT A SOLID WASTE FACILITY. PROPER OFF-SITE DISPOSAL OF THE DEBRIS WOULD BE THE FINAL RESPONSE FOR THAT DEBRIS.

REUSE OR RECYCLING OF THE MATERIAL.

A NUMBER OF MATERIALS AT THE SITE WILL BE EVALUATED TO DETERMINE IF THEY CAN BE ADEQUATELY DECONTAMINATED, IF NECESSARY, AND THEN REUSED OR RECYCLED. STEEL, WOOD AND OTHER MATERIALS THAT MEET DECONTAMINATION REQUIREMENTS APPROVED BY THE EPA DURING REMEDIAL DESIGN, CAN BE SALVAGED FOR REUSE. STEEL CAN BE DECONTAMINATED BY HIGH PRESSURE WASHING, OR BY OTHER PROCEDURES APPROVED BY THE EPA. STEEL MAY NEED TO BE DECONTAMINATED BEFORE BEING RECYCLED BY BATCH MELTING OR RESMELTING AT AN OFF-SITE FACILITY. WOOD THAT IS A DANGEROUS OR HAZARDOUS WASTE MUST BE DECONTAMINATED BEFORE REUSE. WOOD DECONTAMINATION PROCEDURES, SUCH AS REMOVING THE EXTERIOR OF THE WOOD BY PLANING, WILL ALSO BE SUBJECT TO APPROVAL BY THE EPA. LEAD COLLECTED IN DUST AND WASTEWATER SLUDGE COULD ALSO BE RECYCLED BY RESMELTING AT AN OFF-SITE FACILITY.

ON-SITE INCINERATION OF WOOD THAT IS NOT A HAZARDOUS WASTE OR A DANGEROUS WASTE.

A FORMER PRODUCTION VESSEL, CALLED A CONVERTER, IS AVAILABLE AT THE SITE. THE CONVERTER CAN BE MODIFIED TO INCINERATE WOOD THAT IS NEITHER A HAZARDOUS WASTE NOR A DANGEROUS WASTE. WOOD THAT IS A HAZARDOUS OR DANGEROUS WASTE WILL BE TEMPORARILY STORED IN THE FINE ORE BINS BUILDING UNTIL FINAL DISPOSAL OR TREATMENT IS SELECTED AS PART OF THE FINAL REMEDY.

ALTHOUGH UNDER CERCLA S121(E), PERMITS ARE NOT REQUIRED FOR ACTIVITIES CONDUCTED ENTIRELY ON-SITE, PSAPCA HAS ISSUED A PERMIT TO ASARCO REGULATING PERFORMANCE OF THE CONVERTER. EPA CAN AUTHORIZE ASARCO TO CONDUCT A REMEDIAL ACTION TO FULLY COMPLY WITH THIS PERMIT UNDER THE AUTHORITY OF CERCLA S122 (E)(6). IN THE EVENT EPA DETERMINES, HOWEVER, THAT IT IS NECESSARY TO WITHDRAW ITS AUTHORIZATION, ANY ACTIVITY INVOLVING THE CONVERTER MUST COMPLY WITH SUBSTANTIVE REQUIREMENTS UNDER FEDERAL OR STATE LAWS AND REGULATIONS.

DISPOSAL ALTERNATIVES FOR STACK DEBRIS

DEMOLITION OF THE SMELTER STACK WILL GENERATE 12,000 TO 15,700 CUBIC YARDS OF DEBRIS, PRIMARILY BRICK WITH VARYING LEVELS OF CONTAMINATION. THERE WERE SEVERAL ALTERNATIVES EVALUATED FOR THE TEMPORARY AND PERMANENT DISPOSAL OF THIS DEBRIS PENDING SELECTION OF THE FINAL REMEDY FOR THE SMELTER SITE.

ON-SITE STORAGE IN PLACE.

A TEMPORARY STORAGE FACILITY WOULD BE CREATED FROM THE TRENCH AND BERMED AREA IN WHICH THE STACK DEBRIS IS EXPECTED TO SETTLE FOLLOWING THE EXPLOSIVE DEMOLITION. SINCE THIS DEBRIS WILL CONTAIN HAZARDOUS WASTE AND DANGEROUS WASTE, THE STORAGE AREA DESIGN WOULD BE EVALUATED FOR COMPLIANCE WITH THE FEDERAL AND STATE REQUIREMENTS FOR A WASTE PILE (40 CFR PART 264, SUBPART L; WAC 173-303-660). SPECIFICALLY, THE WASTE PILE WOULD HAVE TO BE PROTECTED FROM WATER RUN-ON AND WIND EROSION, AND A SUFFICIENT LINER AND LEACHATE COLLECTION SYSTEM WOULD BE REQUIRED. GROUNDWATER MONITORING WELLS WOULD BE PLACED UP AND DOWN GRADIENT OF THIS AREA. COVERED DEMOLITION DEBRIS WOULD STAY IN PLACE UNTIL A PERMANENT SOLUTION FOR DEBRIS DISPOSAL IS DECIDED UPON IN THE ROD FOR COMPLETE SITE REMEDIATION.

ON-SITE STORAGE IN THE FINE ORE BINS BUILDING

THE FINE ORE BINS BUILDING IS A LARGE BUILDING THAT IS PRESENTLY BEING USED TO TEMPORARILY STORE SOILS EXCAVATED FROM THE RUSTON EXPEDITED RESPONSE ACTION. AFTER DEMOLITION OF THE SMELTER STACK THE CONTAMINATED BRICKS WOULD BE MOVED BY TRUCK WITHIN THE AREA OF CONTAMINATION FROM THE STACK AREA TO TEMPORARY STORAGE IN THE FINE ORE BINS BUILDING. TEMPORARY STORAGE IN THIS BUILDING WILL MEET THE REQUIREMENTS FOR A WASTE PILE (SEE FOOTNOTE 5 BELOW). THE STACK DEBRIS WOULD STAY IN THE FINE ORE BINS BUILDING UNTIL A PERMANENT SOLUTION FOR DEBRIS DISPOSAL IS DECIDED UPON IN THE ROD FOR COMPLETE SITE REMEDIATION.

OFF-SITE DISPOSAL

UNDER THIS ALTERNATIVE, STACK DEBRIS WOULD BE TRANSPORTED TO AN APPROVED WASTE FACILITY. WHETHER THE MATERIALS WERE SHIPPED TO A HAZARDOUS WASTE OR A SOLID WASTE FACILITY WOULD DEPEND ON ANALYSIS OF THE DEBRIS CONTAMINATION. THIS ALTERNATIVE PROVIDES PERMANENT DISPOSAL FOR THE STACK BRICKS AFTER THE STACK'S DEMOLITION.

SURFACE WATER CONTROLS

NO ACTION

THE NO ACTION ALTERNATIVE FOR THE PARTIAL CONTROL OF SURFACE WATER FROM THE ADJACENT AREA OFF-PROPERTY WOULD NOT PREVENT CONTAMINANT TRANSPORT. SURFACE WATERS MUST BE DIVERTED FROM FLOWING ON THE SMELTER FACILITY BECAUSE PRECIPITATION CONTACT WITH NEWLY EXPOSED SURFACES MUST BE MINIMIZED TO PREVENT FURTHER CONTAMINATION TO GROUNDWATER AQUIFERS AND COMMENCEMENT BAY.

DIVERSION

THE DRAFT FEASIBILITY STUDY (FS) EVALUATED IN DETAIL ONLY ONE ALTERNATIVE TO DIVERT AND CONTROL SURFACE WATERS FROM THE 45-ACRE DRAINAGE AREA ADJACENT TO THE SITE (SEE ALTERNATIVES 3A, 4.1A, AND 7A).

THE SURFACE WATER RUN ON FROM AREAS ADJACENT TO THE ASARCO FACILITY WOULD BE DIVERTED BEFORE ENTERING THE SITE AND DIRECTED TO OFF-PROPERTY STORM WATER OUTFALLS (THE NORTHERN OR SOUTHERN MOST OUTFALLS DISCUSSED IN SITE CHARACTERISTICS). DIVERTING THE SURFACE WATER BEFORE THE ON-SITE DEMOLITION ACTIVITIES WILL REDUCE THE POTENTIAL PROBLEMS OF INCREASED CONTAMINATION FROM THE NEWLY EXPOSED SURFACES ON SITE. REDUCING THE VOLUME OF SURFACE WATER ON SITE WILL ALSO REDUCE CONTAMINANT LOADING TO THE GROUNDWATER AQUIFERS ON SITE. IN THE DRAFT FEASIBILITY STUDY FOR THIS SITE, THE DIVERSION OF RUN-ON SURFACE WATER WAS INCLUDED AS A COMPONENT OF EACH REMEDIAL ALTERNATIVE THAT WAS ANALYZED IN DETAIL.

ON-SITE SURFACE WATER COLLECTION

ON-SITE WATER THAT RESULTS FROM PRECIPITATION AND DUST SUPPRESSION ACTIVITIES, DURING THE STACK DEMOLITION AND CLEANING AND DEMOLISHING THE STRUCTURES, WILL BE CONTROLLED TO THE EXTENT PRACTICABLE. SURFACE WATER COMING INTO CONTACT WITH THE NEWLY EXPOSED SOILS WILL BE CHANNELED INTO THE SEDIMENTATION BASINS AND COLLECTED FOR TREATMENT IN THE WASTEWATER EVAPORATION SYSTEM. OTHER SURFACE WATER CONTROLS TO MINIMIZE THE POTENTIAL FOR CONTAMINANT TRANSPORT AND POTENTIAL SOIL EROSION MAY INCLUDE:

- SOIL COVERS/TARPS
- SOIL SEALANT/BINDERS
- SURFACE WATER DIVERSION DITCHES
- SOIL BERMS/CONTAINMENT STRUCTURES
- GROUTING KEY DRAINS TO RE-ROUTE POTENTIALLY CONTAMINATED SURFACE WATER TO THE WATER EVAPORATION SYSTEM.

#CAA
COMPARATIVE ANALYSIS OF ALTERNATIVES

THE NATIONAL CONTINGENCY PLAN (NCP) REQUIRES THAT EACH ANALYZED REMEDIAL ALTERNATIVE BE EVALUATED ACCORDING TO SPECIFIC CRITERIA. THE PURPOSE OF THIS EVALUATION IS TO PROMOTE CONSISTENT IDENTIFICATION OF THE RELATIVE ADVANTAGES AND DISADVANTAGES OF EACH ALTERNATIVE, THEREBY ENSURING COMPLIANCE WITH CERCLA REQUIREMENTS AND GUIDING SELECTION OF REMEDIES OFFERING THE MOST EFFECTIVE AND EFFICIENT MEANS OF ACHIEVING SITE CLEANUP OBJECTIVES. THERE ARE NINE EVALUATION CRITERIA BY WHICH FEASIBLE REMEDIAL ALTERNATIVES ARE JUDGED. WHILE ALL NINE CRITERIA ARE IMPORTANT, THEY ARE WEIGHTED DIFFERENTLY IN THE DECISION-MAKING PROCESS. THRESHOLD CRITERIA ARE USED TO DETERMINE WHETHER AN ALTERNATIVE MEETS A REQUIRED LEVEL OF PERFORMANCE. PRIMARY BALANCING CRITERIA ARE USED TO EVALUATE TECHNICAL, ECONOMIC, AND PRACTICAL REALITIES, AND MODIFYING CRITERIA REQUIRE CONSIDERATION OF STATE AND COMMUNITY CONCERNS.

THE NINE CRITERIA ARE:

THRESHOLD CRITERIA

1. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

2. COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) UNDER FEDERAL OR STATE ENVIRONMENTAL LAWS

PRIMARY BALANCING CRITERIA

3. LONG-TERM EFFECTIVENESS AND PERMANENCE
4. REDUCTION OF TOXICITY, MOBILITY, OR VOLUME
5. SHORT-TERM EFFECTIVENESS
6. IMPLEMENTABILITY
7. COST

MODIFYING CRITERIA

8. STATE ACCEPTANCE
9. COMMUNITY ACCEPTANCE

THRESHOLD CRITERIA

THE REMEDIAL ALTERNATIVES FOR THIS INTERIM ACTION WERE FIRST EVALUATED IN RELATION TO THE THRESHOLD CRITERIA: OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT AND COMPLIANCE WITH ARARS. THE THRESHOLD CRITERIA MUST BE MET BY THE POTENTIAL ALTERNATIVES BEFORE FURTHER CONSIDERATION AS REMEDIES FOR THE RECORD OF DECISION.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS CRITERIA ADDRESSES WHETHER OR NOT REMEDIAL ACTIONS PROVIDE ADEQUATE PROTECTION AND DESCRIBES THE MECHANISMS FOR CONTROLLING RISKS FOR THE DIFFERENT EXPOSURE PATHWAYS.

THE NO ACTION ALTERNATIVE WOULD NOT BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT BECAUSE IT WOULD NOT STABILIZE THE SITE, PREVENT AN UNCONTROLLED COLLAPSE OF THE SMELTER STACK, OR CONTROL SURFACE WATER RUN ON FROM THE ADJACENT PROPERTY. THE NO-ACTION ALTERNATIVE NEITHER REDUCES THE MAGNITUDE OF CONTAMINATION FOUND ON SITE NOR THE LIKELIHOOD OF EXPOSURE TO SITE CONTAMINANTS AND THUS IS NOT CONSIDERED PROTECTIVE OF HUMAN HEALTH OR THE ENVIRONMENT.

THE DEMOLITION OF STRUCTURES AND THE SMELTER STACK AT THE SITE WILL BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT BY REMOVING THE THREAT OF AN UNCONTROLLED STACK COLLAPSE, BY REMOVING CONTAMINATED STRUCTURES AND BY ALLOWING THE FINAL RI/FS TO BE COMPLETED SO THAT FINAL SITE CLEANUP CAN BEGIN.

THE CONVENTIONAL DEMOLITION TECHNIQUES FOR DISMANTLING BUILDINGS AND OTHER STRUCTURES, THE ONLY ALTERNATIVE EVALUATED, WILL BE PERFORMED IN A MANNER THAT IS PROTECTIVE BY FIRST CLEANING THE BUILDINGS AND THEN USING DUST SUPPRESSION MEASURES DURING THE DEMOLITION ACTIVITIES. ANY WATER GENERATED DURING THE DUST SUPPRESSION ACTIVITIES WILL BE COLLECTED TO PREVENT RELEASE INTO THE ENVIRONMENT. THE EFFECTIVENESS OF DUST SUPPRESSION ACTIVITIES WILL BE EVALUATED WITH AMBIENT AIR MONITORING.

THE EXPLOSIVE DEMOLITION TECHNIQUE FOR CONTROLLED IMPLOSION OF THE STACK, WHICH WAS THE ONLY TECHNICALLY FEASIBLE AND/OR SAFE ALTERNATIVE, WILL BE IMPLEMENTED IN A MANNER THAT MINIMIZES RELEASES TO THE ENVIRONMENT AND THREATS TO WORKER SAFETY AND HEALTH. OF THE ALTERNATIVE TECHNIQUES FOR DEMOLISHING THE STACK, IMPLOSION OF THE SMELTER STACK IS THE MOST PROTECTIVE BY POSING THE LEAST RISK TO ON-SITE WORKERS. THE OTHER ALTERNATIVES, WHICH MAY NOT BE FEASIBLE, INVOLVE ATTACHING SCAFFOLDING TO, AND SUSPENDING WORKERS FROM THE UNSAFE CHIMNEY STRUCTURE, THEREBY EXPOSING THEM TO UNACCEPTABLE RISK. THE EXPLOSIVE DEMOLITION ALTERNATIVE, USING IMPLOSION, INCLUDES ENCOURAGING VOLUNTARY EVACUATION OF RESIDENTS FROM APPROXIMATELY 35 HOMES WITHIN A 1,000 FOOT RADIUS OF THE STACK TO ENSURE MINIMAL RISK. DUST SUPPRESSION MEASURES DURING THE EXPLOSIVE DEMOLITION WOULD BE EFFECTIVE IN REDUCING DUST EMISSIONS DURING THE ACTION. AIR MONITORING STATIONS WOULD BE IN OPERATION AT LEAST 24 HOURS BEFORE, DURING AND AFTER THE ACTUAL DEMOLITION OF THE STACK TO ENSURE THAT DUST SUPPRESSION IS EFFECTIVE IN MINIMIZING RELEASES OF PARTICULATES AND FUGITIVE DUSTS.

ALL OF THE POTENTIAL DISPOSAL OPTIONS WOULD BE EFFECTIVE IN ELIMINATING THE RISKS FROM CONTAMINATED MATERIALS THAT WILL BE GENERATED BY THE DEMOLITION. IN-PLACE TEMPORARY STORAGE OF THE STACK BRICKS CREATED FROM THE LINED TRENCH AND BERMED AREA, IN WHICH THE STACK DEBRIS IS EXPECTED TO SETTLE, WOULD BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. SINCE THE DEBRIS WILL CONTAIN HAZARDOUS WASTE AND DANGEROUS WASTE, THE STORAGE AREA DESIGN WOULD BE IN COMPLIANCE WITH THE WASTE PILE REQUIREMENTS.

A LARGE SECURE BUILDING THAT WILL MEET WASTE PILE REQUIREMENTS, KNOWN AS THE FINE ORE BINS, COULD BE USED FOR TEMPORARY STORAGE OF DEMOLITION DEBRIS UNTIL SELECTION OF A PERMANENT DISPOSAL REMEDY. THE BUILDING WILL PROTECT THE MATERIALS FROM EXPOSURE TO THE ENVIRONMENT AND REDUCE THE POTENTIAL FOR THEIR RELEASE. BOTH OF THE TEMPORARY STORAGE OPTIONS, IN-PLACE STORAGE OR THE FINE ORE BINS BUILDING, WOULD REQUIRE THAT THE STORED MATERIALS BE MOVED TO A FINAL DISPOSAL LOCATION IN THE FUTURE, THEREFORE REQUIRING THE CONTAMINATED MATERIALS TO BE DOUBLE HANDLED. THIS PROCEDURE IS NOT PROTECTIVE OF HUMAN HEALTH: HOWEVER A DUST SUPPRESSION PROTOCOL AND A PROTECTIVE LEVEL OF WORKER SAFETY WILL BE REQUIRED. PERMANENT DISPOSAL IN AN APPROVED OFF-SITE WASTE FACILITY WOULD PROVIDE THE MOST PROTECTION TO HUMAN HEALTH AND THE ENVIRONMENT.

WOOD THAT IS NOT A HAZARDOUS OR DANGEROUS WASTE OR THAT CANNOT BE SALVAGED FOR REUSE, WILL BE BURNED ON SITE IN AN INCINERATOR. EPA WILL AUTHORIZE UNDER CERCLA S122 (E)(6) OPERATION OF THE INCINERATOR IN COMPLIANCE WITH A PSAPCA PERMIT. IF AUTHORIZATION UNDER S122 (E)(6) IS WITHDRAWN, OPERATION OF THE INCINERATOR WILL COMPLY WITH FEDERAL AND STATE ARARS. WASTE MATERIALS TO BE DISPOSED OF OFF SITE WILL BE ANALYZED TO DETERMINE IF THE WASTE SHOULD BE SENT TO EITHER A HAZARDOUS WASTE OR SOLID WASTE DISPOSAL FACILITY.

COMPLIANCE WITH ARARS

COMPLIANCE WITH ARARS REQUIRED AN EVALUATION OF EACH ALTERNATIVE TO DETERMINE COMPLIANCE WITH ACTION-, CHEMICAL-, LOCATION-SPECIFIC ARARS (OR JUSTIFICATION FOR A WAIVER), AND WHETHER THE REMEDY ADEQUATELY CONSIDERS OTHER CRITERIA, ADVISORIES, AND GUIDELINES.

AS MORE FULLY DESCRIBED BELOW, EPA IDENTIFIED SEVERAL ARARS INVOLVED IN THIS INTERIM ACTION. ALL ALTERNATIVES ARE EXPECTED TO BE ABLE TO COMPLY WITH ARARS. MATERIALS AND DEBRIS GENERATED BY THE DEMOLITION ACTIVITIES WILL BE TESTED TO DETERMINE WHETHER THE MATERIALS ARE CONSIDERED FEDERAL HAZARDOUS WASTES OR STATE DANGEROUS WASTES. UNDER STATE REGULATION, WASTES CONTAINING GREATER THAN 100 PPM OF ARSENIC ARE REGULATED AS DANGEROUS WASTES. HANDLING, STORAGE AND MANAGEMENT OF THE MATERIALS TO BE STORED ON SITE OR SHIPPED OFF SITE FOR DISPOSAL THAT CONTAIN HAZARDOUS OR DANGEROUS WASTE WILL BE GOVERNED BY THE APPROPRIATE FEDERAL OR STATE HAZARDOUS WASTE REGULATIONS. SPECIFICALLY, REGULATIONS ESTABLISHING REQUIREMENTS FOR WASTE PILES ARE RELEVANT AND APPROPRIATE TO ON-SITE STORAGE OF HAZARDOUS WASTE. FEDERAL AND STATE LAND DISPOSAL RESTRICTIONS (LDR) WILL NOT APPLY TO THE ON-SITE STORAGE OF HAZARDOUS WASTES BECAUSE THE HAZARDOUS WASTES HAVE MERELY BEEN PICKED UP AND CONSOLIDATED WITHIN THE AREA OF CONTAMINATION (53 FR 51444, DECEMBER 21, 1988). TO THE EXTENT LDR APPLY TO THE MATERIALS SHIPPED OFF SITE FOR DISPOSAL THAT ARE NOT COVERED BY A NATIONAL CAPACITY VARIANCE FOR DEBRIS, THE MATERIALS EITHER MUST COMPLY WITH THE APPLICABLE TREATABILITY STANDARD OR MUST BE THE SUBJECT OF A TREATABILITY VARIANCE.

THE INCINERATION OF WOOD IN THE MODIFIED CONVERTER WILL ONLY PROCEED IF THE WOOD IS NOT A HAZARDOUS OR DANGEROUS WASTE. EPA WILL AUTHORIZE UNDER CERCLA S122 (E)(6) OPERATION OF THE INCINERATOR IN COMPLIANCE WITH A PSAPCA PERMIT. IF AUTHORIZATION UNDER S122 (E)(6) IS WITHDRAWN, OPERATION OF THE INCINERATOR WILL COMPLY WITH FEDERAL AND STATE ARARS. IF THE INCINERATOR CANNOT COMPLY WITH THE LEGAL REQUIREMENTS, THE WOOD WILL BE EITHER TEMPORARILY STORED ON SITE OR SHIPPED OFF SITE FOR DISPOSAL AS A HAZARDOUS WASTE OR A SOLID WASTE.

SURFACE WATER FROM OFF PROPERTY WILL BE DIVERTED AWAY FROM THE SITE TO EXISTING CITY STORM WATER OUTFALLS TO COMMENCEMENT BAY. DISCHARGES TO SURFACE WATERS OF THE STATE ARE REGULATED UNDER THE STATE WASTE DISCHARGE PERMIT PROGRAM (WAC 173-216) UNLESS THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT PROGRAM (NPDES) (WAC 173-220) APPLIES. BOTH PROGRAMS REQUIRE TECHNOLOGY-BASED TREATMENT AND COMPLIANCE WITH WATER QUALITY STANDARDS. FOR STORM WATER DISCHARGES, THE STATE CONSIDERS BEST MANAGEMENT PRACTICES (BMP) TO CONSTITUTE ALL KNOWN, AVAILABLE, AND REASONABLE TECHNOLOGY (AKART). SOURCE CONTROL BMPS INCLUDE MEASURES TO PREVENT THE STORM WATER FROM BEING CONTAMINATED IN THE FIRST PLACE. THE REMEDIAL ALTERNATIVES WILL DIVERT THE SURFACE WATER FROM RUNNING OVER THE SITE, THUS MEETING BMPS AND AKART.

ARARS RELATED TO DISPOSAL ACTIVITIES ARE DESCRIBED IN SECTION X BELOW.

PRIMARY BALANCING CRITERIA

FOR THOSE ALTERNATIVES SATISFYING THE THRESHOLD CRITERIA, FIVE PRIMARY BALANCING CRITERIA ARE USED TO EVALUATE OTHER ASPECTS OF THE POTENTIAL REMEDIES. NO ONE ALTERNATIVE WILL NECESSARILY RECEIVE THE HIGHEST EVALUATION FOR EVERY BALANCING CRITERION. THIS PHASE OF THE COMPARATIVE ANALYSIS IS USEFUL IN REFINING THE RELATIVE MERITS OF CANDIDATE ALTERNATIVES. THE FIVE PRIMARY BALANCING CRITERIA ARE: LONG-TERM EFFECTIVENESS AND PERMANENCE; REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT; SHORT-TERM EFFECTIVENESS; IMPLEMENTABILITY; AND COST.

LONG-TERM EFFECTIVENESS AND PERMANENCE

THIS CRITERION EVALUATES THE ABILITY OF A REMEDIAL ALTERNATIVE TO MAINTAIN RELIABLE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT OVER TIME, ONCE CLEANUP GOALS HAVE BEEN ACHIEVED. SINCE THIS INTERIM REMEDIAL ACTION WILL BE FOLLOWED BY A FINAL ROD FOR THE PERMANENT REMEDY, CLEAN-UP GOALS ARE NOT BEING SET. EPA INTENDS THAT THIS INTERIM REMEDIAL ACTION WILL FACILITATE THE PERFORMANCE OF THE FINAL REMEDY SELECTED FOR THE SITE.

THE NO ACTION ALTERNATIVE WOULD NOT RESULT IN ACCEPTABLE RISK REDUCTION AS JUDGED BY THE BASELINE RISK ASSESSMENT IN THE REMEDIAL INVESTIGATION. THIS ALTERNATIVE ALSO DOES NOT ADDRESS THE RISK OF AN UNCONTROLLED SMELTER STACK COLLAPSE AS A RESULT OF ITS CURRENT INSTABILITY NOR DOES IT CONTROL THE WASHING OF CONTAMINANTS INTO SURFACE WATER.

SEVERAL COMPONENTS TO THE REMEDY INCLUDE PERMANENT FEATURES AND WERE THE ONLY ALTERNATIVES CONSIDERED. THE DEMOLITION OF STRUCTURES AND SECURE STORAGE OR DISPOSAL WILL BE EFFECTIVE IN ELIMINATING THE THREAT THAT CONTAMINATION CONTAINED IN THE STRUCTURES WILL MIGRATE INTO THE ENVIRONMENT (SEE EXPOSURE PATHWAYS STUDY).

WITH REGARD TO THE STACK, EACH DEMOLITION ALTERNATIVE WOULD PERMANENTLY PREVENT THE UNCONTROLLED COLLAPSE OF THE UNSTABLE SMELTER STACK. THE DISPOSAL ALTERNATIVES FOR STACK DEBRIS INCLUDE TWO TEMPORARY MEASURES AND THE PERMANENT, OFF-SITE DISPOSAL MEASURE. IN-PLACE CONTAINMENT OF THE STACK BRICKS AFTER THEY FALL COULD BE EFFECTIVE IN PREVENTING RELEASES TO THE ENVIRONMENT IF THE MEASURE WAS CONSTRUCTED IN CONFORMANCE WITH

HAZARDOUS WASTE PILE REQUIREMENTS. HOWEVER, THE "IN-SITU" CONTAINMENT FACILITY WOULD ALSO REQUIRE CONSTRUCTION AND MAINTENANCE OF A LEACHATE COLLECTION AND MONITORING SYSTEM IN AN AREA THAT PRESENTLY HAS MINIMAL CONTAMINATION. THIS MONITORING SYSTEM IS REQUIRED FOR IN-PLACE STORAGE, AND NOT FOR THE FINE ORE BINS BUILDING STORAGE, BECAUSE WATER WILL BE GENERATED BY DUST SUPPRESSION ACTIVITIES DURING THE STACK DEMOLITION AND FOR EFFECTIVELY MONITORING THE IMPACT OF THE FALLING BRICKS ON THE PLASTIC LINING COVERING THE TRENCH. AN "IN-SITU" CONTAINMENT AREA PRESENTS SOME UNCERTAINTY OF EFFECTIVENESS, IN TERMS OF A POTENTIAL ADDITION TO SURFACE AND GROUNDWATER CONTAMINATION, EVEN IN THE NEAR-TERM, UNTIL SELECTION OF THE FINAL DISPOSAL REMEDY.

STORAGE OF THE MATERIALS IN THE FINE ORE BINS, WHICH HAS ADEQUATE CAPACITY AND WILL PROTECT THE MATERIALS FROM SURFACE WATER RUN-ON, PRECIPITATION AND WIND, WILL PROVIDE A MORE EFFECTIVE LONG-TERM STORAGE AREA. OFF-SITE DISPOSAL OF THE DEBRIS IN AN APPROPRIATE HAZARDOUS OR SOLID WASTE FACILITY WOULD PROVIDE A PERMANENTLY EFFECTIVE REMEDY. THE FINAL REMEDY FOR THE STORAGE OF DEMOLITION DEBRIS WILL ADDRESS LONG-TERM EFFECTIVENESS.

ON-SITE INCINERATION OF THE WOOD WILL PERMANENTLY DISPOSE OF THE MATERIALS. TO THE EXTENT THAT MATERIALS ARE SHIPPED OFF SITE FOR DISPOSAL, THE ACTION WILL PERMANENTLY AND EFFECTIVELY ELIMINATE ANY ON-SITE RISKS. MATERIALS SUITABLE FOR DECONTAMINATING, REUSE OR RECYCLING WILL BE PERMANENTLY REMOVED FROM THE SITE.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

THIS CRITERION EVALUATED THE ANTICIPATED PERFORMANCE OF THE VARIOUS TREATMENT TECHNOLOGIES AND ADDRESSED THE STATUTORY PREFERENCE FOR SELECTING REMEDIAL ACTIONS THAT EMPLOY TREATMENT TECHNOLOGIES WHICH PERMANENTLY AND SIGNIFICANTLY REDUCE TOXICITY, MOBILITY, OR VOLUME OF THE HAZARDOUS SUBSTANCES. THIS PREFERENCE IS SATISFIED WHEN TREATMENT IS USED TO REDUCE THE PRINCIPAL THREATS AT A SITE THROUGH DESTRUCTION OF TOXIC CONTAMINANTS, IRREVERSIBLE REDUCTIONS IN CONTAMINANT MOBILITY, OR REDUCTIONS IN THE TOTAL VOLUME OF CONTAMINATED MEDIA.

THE NO-ACTION ALTERNATIVE DOES NOT EMPLOY TREATMENT AS A PRINCIPAL COMPONENT OF THE REMEDY; TOXICITY, MOBILITY AND VOLUME OF THE CONTAMINATION WOULD REMAIN UNCHANGED.

CERTAIN ALTERNATIVES ACT TO REDUCE AN ASPECT OF TOXICITY, MOBILITY AND VOLUME (TMV). ALTHOUGH WASHING STRUCTURES COULD TEMPORARILY INCREASE THE MOBILITY OF CONTAMINANTS, THE DIVERSION SYSTEM WILL DIRECT THE WASTEWATER TO THE EVAPORATION SEDIMENTATION BASINS. REMOVAL OF CONTAMINATED DUST, DEMOLITION OF CONTAMINATED STRUCTURES, AND DUST SUPPRESSION ACTIVITIES WILL GREATLY REDUCE THE MOBILITY OF THE CONTAMINATED DUST THAT COULD BE RELEASED INTO THE ENVIRONMENT. DECONTAMINATION AND THE REUSE OF DEBRIS IS ALSO A REDUCTION IN VOLUME OF CONTAMINANTS AT THE SITE. TREATMENT OF WOOD BY INCINERATION WILL MEET THIS STANDARD. ACTIONS TO DIVERT SURFACE WATERS FROM COMING ON SITE WILL REDUCE THE POTENTIAL MOVEMENT OF CONTAMINANTS IN THE SOILS TO COMMENCEMENT BAY AND TO GROUNDWATER.

THE STORAGE ALTERNATIVES CONSIDERED FOR INTERIM ACTION WILL NOT PERMANENTLY AND SIGNIFICANTLY REDUCE TOXICITY, MOBILITY, AND VOLUME. BECAUSE THIS ACTION DOES NOT CONSTITUTE A FINAL REMEDY FOR THIS OPERABLE UNIT, THE PREFERENCE FOR SUCH REMEDIES WILL BE ADDRESSED BY THE FINAL ROD FOR THIS OPERABLE UNIT. OFF-SITE DISPOSAL WILL EMPLOY TREATMENT WHERE NECESSARY TO COMPLY WITH LAND DISPOSAL RESTRICTIONS.

SHORT-TERM EFFECTIVENESS

THE SHORT-TERM EFFECTIVENESS EVALUATION FOCUSED ON SHORT TERM RISKS WHICH MAY OCCUR DURING CONSTRUCTION AND REMEDIAL ACTION, UNTIL CLEANUP GOALS ARE ACHIEVED.

THE ALTERNATIVES FOR DEMOLISHING AND DISMANTLING BUILDINGS AND THE SMELTER STACK WILL BE EFFECTIVE IN SAFELY REMOVING THE EXISTING STRUCTURES. HOWEVER, SHORT-TERM RELEASES OF DUST AND PARTICULATES WILL RESULT FROM THESE ACTIVITIES THAT WILL BE EFFECTIVELY CONTROLLED. DEMOLITION WILL INCLUDE DUST SUPPRESSION MEASURES TO MINIMIZE DUST EMISSIONS TO AMBIENT AIR AND TO PROTECT WORKERS. AIR MONITORING DEVICES WILL ALSO BE USED TO DETERMINE THE AIR EMISSIONS. IF AIR EMISSIONS EXCEED THE STANDARD DETERMINED TO BE ACCEPTABLE, DEMOLITION ACTIVITIES WILL BE TEMPORARILY DISCONTINUED OR ADDITIONAL MEASURES TO REDUCE EMISSIONS WILL BE UNDERTAKEN AS APPROPRIATE.

ALL THE BRICK STORAGE AND DISPOSAL ALTERNATIVES WOULD PRESENT SOME RISK OF EXPOSURE TO WORKERS AND RESIDENTS FROM HANDLING AND MOVING THE DEBRIS WHICH CAN BE MINIMIZED BY USING HEALTH AND SAFETY PROCEDURES AND DUST SUPPRESSION METHODS. AN "IN-SITU" CONTAINMENT FACILITY PRESENTS SOME UNCERTAINTY OF EFFECTIVENESS IN THE NEAR-TERM, IN REGARD TO A POTENTIAL ADDITION TO SURFACE AND GROUNDWATER CONTAMINATION. THE FINE ORE BINS BUILDING PROVIDES AN EFFECTIVE SHORT-TERM STORAGE FACILITY IF THE STORAGE OF MATERIALS MEET WASTE PILE REQUIREMENTS.

THE ALTERNATIVE FOR DIVERTING OFF-PROPERTY SURFACE WATERS FROM COMING ON SITE WILL BE EFFECTIVE IN REDUCING THE TRANSPORT OF CONTAMINANTS IN SURFACE SOILS.

IMPLEMENTABILITY

THIS EVALUATION ADDRESSES THE TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF IMPLEMENTING THE ALTERNATIVES INCLUDING THE AVAILABILITY OF MATERIALS AND SERVICES REQUIRED TO AFFECT THE REMEDY.

EXPLOSIVE DEMOLITION, BY IMPLOSION, OF THE STACK IS CONSIDERED THE ONLY APPROACH WHICH IS FEASIBLE TO IMPLEMENT DUE TO THE HEIGHT AND CONDITION OF THE STACK. THE STRUCTURAL INSTABILITY OF THE STACK PRESENTS TECHNICAL AND WORKER SAFETY PROBLEMS.

BUILDING DEMOLITION AND DUST SUPPRESSION APPEAR TO BE TECHNICALLY AND ADMINISTRATIVELY IMPLEMENTABLE BECAUSE THEY EMPLOY CONVENTIONAL TRADE METHODS. THE SPECIFIC DESIGN OF THE WASTEWATER COLLECTION SYSTEM, WHICH WILL INVOLVE COLLECTION, TREATMENT AND MONITORING OF WASTEWATER WILL BE COMPLETED DURING REMEDIAL DESIGN (RD) BUT ALSO APPEARS TO BE TECHNICALLY AND ADMINISTRATIVELY FEASIBLE.

EACH ALTERNATIVE FOR STACK BRICK STORAGE AND DISPOSAL IS TECHNICALLY FEASIBLE. THERE IS ADEQUATE CAPACITY FOR ON-SITE STORAGE IN THE FINE ORE BINS. CONSTRUCTION OF AN IN-PLACE STORAGE AREA (I.E., AT THE BASE OF THE STACK) MEETING WASTE PILE SPECIFICATIONS CAN BE ACCOMPLISHED. ADEQUATE OFF-SITE DISPOSAL CAPACITY IS AVAILABLE.

OF THE DISPOSAL OPTIONS, ONLY ONE ALTERNATIVE, TO INCINERATE WOOD IN AN ON-SITE CONVERTER INCINERATOR, IS TECHNICALLY FEASIBLE IF THE CONVERTER CAN BE MODIFIED TO MEET EMISSION AND PERFORMANCE REQUIREMENTS.

DECONTAMINATING, REUSING AND RECYCLING DEMOLITION DEBRIS ARE ALL TECHNIQUES WHICH ARE IMPLEMENTABLE AND WILL BE BASED ON AN EPA-APPROVED SAMPLING PLAN.

COST

PRESENT WORTH COSTS ARE USED TO EVALUATE AND COMPARE THE ESTIMATED MONETARY VALUE OF EACH REMEDIAL ALTERNATIVE. PRESENT WORTH CONSISTS OF THE SUM OF ESTIMATED CAPITAL COSTS AND ESTIMATES OF DISCOUNTED ANNUAL OPERATION AND MAINTENANCE (O&M) COSTS FOR EACH OF THE FOLLOWING COMPONENTS OF THE REMEDY.

ESTIMATED COSTS FOR THE DEMOLITION OR DISMANTLING OF THE STRUCTURES OTHER THAN THE STACK ARE $9,192,000, INCLUDING DUST REMOVAL AND SUPPRESSION, SURFACE WATER CONTAINMENT AND DIVERSION, OPERATION OF THE EVAPORATOR, DEMOLITION, AND THE PREPARATION FOR DISPOSAL.

THE COST OF THE EXPLOSIVE DEMOLITION OF THE STACK IS ESTIMATED AT $720,500. OTHER TYPES OF MANUAL AND MECHANICAL DEMOLITION COSTS WERE NOT GATHERED, WITH THE EXCEPTION OF OUTRIGGER SCAFFOLDING, BECAUSE THESE ALTERNATIVES WERE NOT CONSIDERED TECHNICALLY FEASIBLE. ESTIMATED COSTS FOR THE OUTRIGGER SCAFFOLD ARE $2,000,000.

OF THE CONTAINMENT ALTERNATIVES FOR THE STACK BRICKS, STORAGE IN THE FINE ORE BINS HAS CAPITAL COSTS ESTIMATED AT $75,000 TO $260,000. CONSTRUCTING AN IN-PLACE STORAGE AREA WOULD COST APPROXIMATELY $100,000 TO $186,562 AND WOULD HAVE HIGHER O&M COSTS AS A RESULT OF LONG-TERM GROUNDWATER MONITORING AND MAINTENANCE OF THE CONTAINMENT FEATURES. EPA ESTIMATES THAT DISPOSAL OF THE STACK DEBRIS IN AN OFF-SITE LANDFILL WOULD COST FROM $3,960,000 TO $4,996,500; DISPOSAL OF OTHER DEMOLITION DEBRIS IN AN OFF-SITE LANDFILL IS ESTIMATED TO BE $22,000,000. THIS COST COULD BE REDUCED DEPENDING ON THE PERCENTAGE OF SALVAGEABLE STEEL AND THE VOLUME OF OTHER SALVAGEABLE AND COMBUSTIBLE DEMOLITION DEBRIS THAT WOULD NOT HAVE TO GO TO A LANDFILL. THIS ALTERNATIVE HAS NO FURTHER COSTS FOR O&M. BOTH ON-SITE STORAGE ALTERNATIVES ARE ONLY TEMPORARY AND FURTHER COSTS WOULD BE NECESSARY TO RELOCATE THE BRICKS INTO FINAL DISPOSAL ON OR OFF SITE.

MODIFICATION OF THE CONVERTER INCINERATOR AND OPERATION OF THE INCINERATOR, INCLUDING AIR MONITORING, IS ESTIMATED TO COST $1,777,000.

THE COST OF DIVERTING OFF-PROPERTY SURFACE WATERS TO EXISTING DRAINAGE SYSTEMS OF THE CITY OF TACOMA AND THE TOWN OF RUSTON IS ESTIMATED BETWEEN $1,869,500 TO $2,891,600 BASED ON THE EVALUATION OF COSTS IN THE DRAFT FEASIBILITY STUDY (FS). THE ACTUAL COSTS OF DIVERTING THE OFF-PROPERTY SURFACE WATER MAY BE LESS THAN THESE ESTIMATED COSTS SINCE THE ALTERNATIVES IN THE FS ALSO INCLUDED THE CAPITAL COSTS OF ON-SITE SURFACE WATER CONTROLS (SEE ALTERNATIVES 3A, 4.1A, AND 7A IN THE FEASIBILITY STUDY).

THE RANGE OF ESTIMATED COSTS FOR THE INTERIM REMEDIAL ACTION IS FROM $11,764,500 TO $38,686,000.

MODIFYING CRITERIA

THE MODIFYING CRITERIA ARE USED IN THE FINAL ANALYSIS OF REMEDIAL ALTERNATIVES AND ARE GENERALLY CONSIDERED IN ALTERING AN OTHERWISE VIABLE ALTERNATIVE RATHER THAN DECIDING BETWEEN VERY DIFFERENT ALTERNATIVES. THE TWO MODIFYING CRITERIA ARE STATE AND COMMUNITY ACCEPTANCE.

STATE ACCEPTANCE

THE WASHINGTON STATE DEPARTMENT OF ECOLOGY (ECOLOGY) HAS BEEN INVOLVED WITH THE DEVELOPMENT AND REVIEW OF THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY FOR THE SITE, AND WITH THE DEVELOPMENT OF THE PROPOSED PLAN FOR THIS INTERIM REMEDIAL ACTION. ECOLOGY FAVORS IMPLEMENTATION OF THE INTERIM MEASURES IN THE SELECTED REMEDY TO STABILIZE THE SITE IN PREPARATION FOR SELECTION OF THE FINAL REMEDY IN A SUBSEQUENT ROD AND HAS SUBMITTED A LETTER OF CONCURRENCE (SEE APPENDIX II).

COMMUNITY ACCEPTANCE

MANY WRITTEN AND ORAL COMMENTS RECEIVED DURING THE 60-DAY PUBLIC COMMENT PERIOD SUPPORTED IMPLEMENTATION OF THE DEMOLITION ACTIVITIES. COMMENTORS ENCOURAGED EPA TO APPROVE THE PLAN RAPIDLY IN ORDER TO GET WORK UNDERWAY. ALTHOUGH THE MAJORITY OF COMMENTS SUPPORTED THE PLAN, SOME MEMBERS OF THE COMMUNITY FELT THE STACK SHOULD BE PRESERVED. ONE COMMENTOR SPECIFICALLY PROPOSED SAVING THE BOTTOM 50 FEET AS A MEMORIAL IN RECOGNITION OF THE HISTORY OF THE SITE. ADDITIONAL CONCERN HAS FOCUSED ON THE TEMPORARY ON-SITE STORAGE COMPONENT OF THE REMEDY.

RESIDENTS AND LOCAL OFFICIALS EXPRESSED CONCERN THAT EPA ONLY STORE THE MATERIAL TEMPORARILY, NOT PERMANENTLY DISPOSE OF THE MATERIALS ON SITE.

#TSR
THE SELECTED REMEDY

REMEDIAL OBJECTIVES

THE OBJECTIVES OF THE SELECTED INTERIM REMEDIAL MEASURE ARE TO:

REMOVE BUILDINGS AND STRUCTURES AT THE SITE WHICH ARE CONTAMINATED AND PRESENT A HAZARD, AND IN ANTICIPATION OF THE NEED TO FURTHER CHARACTERIZE AND REMEDIATE THE SITE.

DEMOLISH THE INCREASINGLY UNSTABLE SMELTER CHIMNEY STACK TO ELIMINATE THE THREAT OF A COLLAPSE.

CONTROL THE MOVEMENT OF SURFACE WATER COMING ON THE FACILITY FROM ADJACENT AREAS IN ORDER TO REDUCE THE AMOUNT OF WATER RUNNING THROUGH CONTAMINATED SOIL AND SLAG, AND TO MINIMIZE TRANSPORT OF CONTAMINANTS TO GROUNDWATER AND OFF SITE.

THE SELECTED REMEDY ADDRESSES SOURCE AREAS ON SITE. AS DESCRIBED IN SECTION IV, SCOPE AND ROLE OF RESPONSE ACTION, THIS OPERABLE UNIT IS AN INTEGRAL PORTION OF THE OVERALL SITE REMEDY. THE INTERIM ACTIVITIES SELECTED IN THIS ROD WILL CONTRIBUTE TO THE EFFICIENT PERFORMANCE OF THE LONG-TERM REMEDIAL ACTIONS UNDER CONSIDERATION FOR THE SITE. BASED ON EVALUATIONS CONDUCTED UNDER THE RI/FS, THIS INTERIM ACTION OPERABLE UNIT IS NEITHER INCONSISTENT WITH NOR WILL PRECLUDE IMPLEMENTATION OF THE FINAL REMEDY.

DESCRIPTION OF REMEDIAL COMPONENTS

EPA SELECTED A PLAN TO ADDRESS THE INSTABILITY OF THE SMELTER STACK, TO REMOVE THE ON-SITE STRUCTURES IN PREPARATION OF FINAL REMEDIATION, AND TO CONTROL OFF-PROPERTY SURFACE WATER RUN-ON AT THE SITE.

SITE PREPARATION. SEVERAL MEASURES WILL BE IMPLEMENTED BEFORE BEGINNING THE DEMOLITION PHASE OF THE INTERIM REMEDIAL ACTION.

ASBESTOS ABATEMENT

PRIOR TO DEMOLITION OR ANY OTHER DISRUPTIVE ACTIVITIES, ALL BUILDINGS AND STRUCTURES WILL BE INSPECTED TO LOCATE AND IDENTIFY ALL ASBESTOS-CONTAINING MATERIAL (ACM). ACM FROM THE ON-SITE BUILDINGS SHALL BE REMOVED AND DISPOSED OF OFF SITE IN ACCORDANCE WITH APPLICABLE FEDERAL AND STATE REQUIREMENTS.

DUST REMOVAL

BUILDINGS AND STRUCTURES AT THE SITE (EXCEPT THE STACK) WILL BE VACUUMED BEFORE BEGINNING DEMOLITION ACTIVITIES. DUST REMOVAL WILL BE ACCOMPLISHED BY A VACUUM TRUCK PULLING DUSTS INTO A COLLECTION CHAMBER USING WETTING METHODS AT THE POINT OF ENTRY. DUST CONTROL METHODS WILL BE IN ACCORDANCE WITH APPLICABLE FEDERAL AND STATE REQUIREMENTS DURING THE VACUUMING PROCEDURE.

AREAS OF STRUCTURES CONTAINING DUST THAT ARE INACCESSIBLE FOR VACUUMING WILL BE WASHED DOWN TO CURTAIL DUST EMISSIONS. DUST WASHING WILL INCLUDE MEASURES TO COLLECT WASTE WATER, INCLUDING CONCRETE SLABS, TEMPORARY CURBING, OR SANDBAGS. PLASTIC SHEETING MAY BE USED IF THE STRUCTURE IS NOT LOCATED ON A CONCRETE SLAB.

WASTEWATERS GENERATED FROM THE DUST SUPPRESSION SYSTEM WILL BE COLLECTED AT EACH DEMOLITION SITE AND ROUTED TO A WASTEWATER EVAPORATION SYSTEM.

ROAD AND TUNNEL SURVEY

IN RESPONSE TO COMMENTS, ROADS USED FOR THE TRANSPORT OF STACK BRICK AND FOR THE TRANSPORT OF DEMOLITION DEBRIS OFF SITE, WILL BE SURVEYED BEFORE RELOCATION OF THE DEBRIS COMMENCES. A RAIL AND CAR TUNNEL SURVEY WILL BE COMPLETED BEFORE AND AFTER DEMOLISHING THE SMELTER STACK TO CONFIRM THAT NO STRUCTURAL DAMAGE WAS CAUSED BY THE IMPACT OF FALLING BRICK.

TRANSPORT OF THE DEBRIS FROM DEMOLISHED SITE STRUCTURES, OTHER THAN THE STACK, TO THE FINE ORE BINS WILL NOT USE RUSTON ROADWAYS OR THE TUNNEL.

DEMOLITION OF STRUCTURES

BUILDINGS AND STRUCTURES OTHER THAN THE STACK

DEMOLITION OF, OR DISMANTLING OF THE ON-SITE STRUCTURES WILL BE ACCOMPLISHED BY CONVENTIONAL TRADE DEMOLITION TECHNIQUES. APPROXIMATELY 73 STRUCTURES LISTED ON APPENDIX V TO THIS ROD, AS WELL AS MISCELLANEOUS SHEDS, WAREHOUSES, TANKS, BINS AND TRESTLES, WILL BE DEMOLISHED OR DISMANTLED. CONVENTIONAL EQUIPMENT, SUCH AS SHEARS, GRAPPLES, LOADERS, AND CRANES, WILL BE USED WHERE NECESSARY TO SAFELY AND EFFICIENTLY DISMANTLE THE STRUCTURES. TO THE BEST OF EPA'S KNOWLEDGE THERE ARE NO UNDERGROUND STORAGE TANKS AT THE ASARCO FACILITY AS REPRESENTED IN THE RI/FS.

HIGH-PRESSURE WATER FOGGING NOZZLES WILL BE USED TO MINIMIZE DUST EMISSIONS TO THE MAXIMUM EXTENT POSSIBLE DURING DEMOLITION. DURING DEMOLITION, SURFACES NEWLY EXPOSED WILL BE IMMEDIATELY WETTED TO CONTROL DUST. THE EVAPORATION SYSTEM, AS DESCRIBED IN APPENDIX A TO THE ASARCO SITE STABILIZATION PLAN PHASE II, WILL BE DESIGNED TO EVAPORATE THE WATER FROM SOLIDS. THE SOLIDS WILL BE COLLECTED AND STORED IN THE FINE ORE BINS BUILDING OR SENT OFF SITE FOR RECYCLING.

SMELTER STACK

THE SMELTER STACK WILL BE DEMOLISHED BY A CONTROLLED EXPLOSIVE DEMOLITION TECHNIQUE KNOWN AS IMPLOSION. THE IMPLOSION WILL BE DESIGNED SO THAT THE STACK DEBRIS WILL COLLAPSE INTO A CONFINED AREA IN WHICH A TRENCH WILL BE CONSTRUCTED TO TEMPORARILY CONTAIN THE STACK BRICKS BEFORE MOVING THE DEBRIS INTO THE FINE ORE BINS BUILDING.

A NUMBER OF PRECAUTIONARY AND SAFETY MEASURES ARE INCLUDED IN THE REMEDY. A DUST SUPPRESSION SYSTEM WILL BE INSTALLED AROUND THE STACK THAT IS DESIGNED TO PREVENT, TO THE MAXIMUM EXTENT PRACTICABLE, THE RELEASE OF DUST AND PARTICULATES DURING THE DEMOLITION. IF PRACTICABLE, AND IF DETERMINED NECESSARY TO SUPPRESS DUST, AN ENCAPSULANT WILL BE APPLIED TO THE INTERIOR LINING OF THE STACK PRIOR TO THE DEMOLITION. SEISMOGRAPH AND AIR BLAST METERS WILL BE INSTALLED TO RECORD GROUND VIBRATION AND AIR PRESSURE GENERATED BY THE EXPLOSIVE DEMOLITION. RESIDENTS LIVING WITHIN 1,000 FEET OF THE STACK, WHICH INCLUDES APPROXIMATELY 35 RESIDENCES, WILL BE ASKED TO EVACUATE DURING THE PERIOD OF STACK DEMOLITION. EVACUATION PROCEDURES WILL BE CONDUCTED WITH LOCAL OFFICIALS. THE DEMOLITION AND MONITORING OF THE DEMOLITION WILL BE CONDUCTED IN CONFORMANCE WITH APPLICABLE FEDERAL AND STATE OCCUPATIONAL SAFETY AND HEALTH REQUIREMENTS, AND WILL CONSIDER GUIDELINES BY THE US BUREAU OF MINES THAT PERTAIN TO OPEN BLASTING.

THE TRENCH INTO WHICH THE STACK DEBRIS WILL FALL WILL BE CONSTRUCTED TO PREVENT ANY DUST SUPPRESSION WASTEWATER FROM PENETRATING THE UNDERLYING SOILS AND GROUND WATER. THE SIDES OF THE TRENCH WILL BE BERMED WITH SOILS FROM THE SMELTER STACK AREA. A FRENCH DRAIN SYSTEM WILL COVER THE BOTTOM OF THE TRENCH. THIS DRAINAGE AREA WILL BE COVERED WITH VISQUEEN TO PREVENT WATER PENETRATION AND A SUFFICIENT COVER OF SAND TO PROTECT THE VISQUEEN FROM PENETRATION BY THE STACK BRICKS.

SURFACE WATER CONTROLS

DURING THE DEMOLITION ACTIVITIES NEW SURFACE SOILS WILL BE EXPOSED, AND DEMOLITION DEBRIS WILL BE TEMPORARILY STOCKPILED AROUND THE SITE BEFORE MOVING IT TO THE FINE ORE BINS BUILDING. PRECIPITATION CONTACTING THE DEMOLITION AREA AND WATER GENERATED FROM THE DEMOLITION ACTIVITIES WILL COME IN CONTACT WITH THE EXPOSED SURFACES OF THE DEMOLITION DEBRIS, AND EXPOSED SOILS. THERE IS A POTENTIAL THAT THE WATER MAY PICK UP CONTAMINANTS AND TRANSPORT THEM OFF SITE. SOIL CONTAINMENT AND SURFACE WATER CONTROL MEASURES WILL BE IMPLEMENTED TO MINIMIZE THE POTENTIAL FOR SOIL EROSION AND CONTAMINANT TRANSPORT. THE CONTROL MEASURES INCLUDE THE FOLLOWING:

- SOIL COVER/TRAPS
- SOIL SEALANT/BINDERS
- SURFACE WATER DIVERSION DITCHES
- SOIL BERMS/CONTAINMENT STRUCTURES
- GROUTING KEY DRAINS TO RE-ROUTE POTENTIALLY CONTAMINATED SURFACE WATER TO THE WATER EVAPORATION SYSTEM
- ROUTING COLLECTED SURFACE WATER TO THE EVAPORATION SYSTEM

AS THE DEMOLITION PROCESS TAKES PLACE EACH OF THESE MEASURES WILL BE CONSIDERED ON AN AREA SPECIFIC BASIS AND THE BEST MEASURE OR COMBINATION OF MEASURES WILL BE IMPLEMENTED. SURFACE WATER DISCHARGE POINTS FROM THE SITE WILL BE MONITORED TO ENSURE THAT OUTFALL TO COMMENCEMENT BAY DOES NOT EXCEED DISCHARGE LIMITS ESTABLISHED BY EPA AND THE STATE.

AIR MONITORING

TO ENSURE THAT THESE INTERIM ACTIVITIES COMPLY WITH FEDERAL AND STATE AIR QUALITY REQUIREMENTS, AND TO EVALUATE THEIR IMPACT ON AIR QUALITY, AN AMBIENT AIR MONITORING PROGRAM USING HIGH VOLUME SAMPLERS TO TEST FOR METAL PARTICULATES AND AIR SAMPLING EQUIPMENT FOR SEMI-VOLATILE COMPOUNDS, WILL BE IMPLEMENTED DURING SITE PREPARATION WORK AND ALL DEMOLITION AND DISMANTLING ACTIVITIES. ACTION LEVELS WILL BE DETERMINED BASED ON ARARS UNDER THE CLEAN AIR ACT FOR SPECIFIC CONTAMINANTS, AND OTHER HEALTH RISK BASED FACTORS.

DISPOSAL OF MATERIALS FROM DEMOLITION ACTIVITIES

DEMOLITION DEBRIS AND MATERIALS FROM THE SITE WILL BE DISPOSED OF IN SEVERAL WAYS, DEPENDING ON THE TYPE OF MATERIAL AND NATURE OF CONTAMINATION. THE APPROPRIATE DISPOSAL OPTION WILL BE APPROVED BY EPA AFTER APPROVED PROTOCOLS FOR SAMPLING AND ANALYSIS ARE USED TO ASSESS THE LEVEL OF RESIDUAL CONTAMINATION AND THE POTENTIAL FOR DECONTAMINATION OF THE MATERIAL. AS DEMOLITION DEBRIS IS GENERATED, IT WILL EITHER BE STORED ON SITE IN THE FINE ORE BINS BUILDING UNTIL A FINAL DISPOSAL REMEDY IS SELECTED OR DISPOSED IN AN OFF-SITE DISPOSAL SITE APPROVED BY EPA. NON- OR DE-CONTAMINATED DEBRIS CAN BE REUSED OR RECYCLED.

TEMPORARY ON-SITE DISPOSAL IN FINE ORE BINS BUILDING

THE FINE ORE BINS, AN ENCLOSED CONCRETE BUILDING WITH A ROOF WITHIN THE AREA OF CONTAMINATION, WILL BE USED FOR THE TEMPORARY STORAGE OF DEMOLITION DEBRIS TO PREVENT THE RELEASE OF HAZARDOUS AND DANGEROUS WASTES INTO THE ENVIRONMENT. THE STORAGE OF DEMOLITION DEBRIS WILL MEET THE WASTE PILE REQUIREMENTS OF HAZARDOUS WASTE FACILITIES (SEE FOOTNOTE 5 BELOW). ALL FORMS OF DEMOLITION DEBRIS FROM BUILDINGS AND THE STACK MAY BE STORED IN THE FINE ORE BINS BUILDING PENDING SELECTION OF A PERMANENT DISPOSAL REMEDY IN THE FINAL ROD FOR THIS SITE. PRIOR TO STORAGE IN THE FINE ORE BINS, THE MATERIALS WILL UNDERGO A WASTE ANALYSIS TO IDENTIFY THE TYPE AND LEVEL OF CONTAMINATION.

THE STACK BRICKS WILL BE LOADED INTO TRUCKS FROM THE TRENCHED AREA AND TAKEN TO THE FINE ORE BINS BUILDING. HAULING THE STACK DEBRIS WILL REQUIRE TRAVEL ON PUBLIC ROADWAYS, AND REQUIRE DECONTAMINATION OF HAUL TRUCKS AT THE LOADING/UNLOADING AREAS.

CONCRETE, STEEL, WOOD, OR OTHER TYPES OF DEBRIS THAT CANNOT BE DECONTAMINATED FOR REUSE OR RECYCLED, OR, IN THE CASE OF WOOD, WHICH CANNOT BE INCINERATED, WILL BE STORED SO THAT THE MATERIALS MAY BE SEGREGATED BY TYPE OF MATERIAL OR CONTAMINATION.

ON-SITE INCINERATION

WOOD MATERIALS WILL BE SAMPLED TO DETERMINE IF THEY ARE DANGEROUS OR HAZARDOUS WASTES. WOOD WHICH IS NOT A HAZARDOUS OR A DANGEROUS WASTE WILL BE INCINERATED ON SITE IN A MODIFIED PRODUCTION VESSEL CALLED A CONVERTER. MATERIALS THAT ARE CONSIDERED HAZARDOUS OR DANGEROUS WASTE WILL NOT BE BURNED IN THE INCINERATOR, WHICH IS NOT DESIGNED TO COMPLY WITH THE HAZARDOUS WASTE INCINERATOR REQUIREMENTS. THE VOLUME OF WOOD IS EXPECTED TO BE 10,500 CUBIC YARDS. IF THE INCINERATOR CANNOT MEET EMISSION REQUIREMENTS, THE WOOD DEBRIS WILL BE EITHER SHIPPED OFF SITE FOR DISPOSAL OR STORED ON SITE IN THE UPGRADED FINE ORE BINS BUILDING PENDING SELECTION OF THE FINAL REMEDY.

OFF-SITE DISPOSAL

DEMOLITION DEBRIS CAN BE SHIPPED OFF SITE FOR DISPOSAL IN AN APPROPRIATE FACILITY, DEPENDING ON THE NATURE OF CONTAMINATION. ALL MATERIAL WILL UNDERGO A WASTE ANALYSIS PRIOR TO SHIPMENT OFF SITE. ALL OFF-SITE DISPOSAL FACILITIES MUST BE OPERATING IN COMPLIANCE WITH APPLICABLE FEDERAL OR STATE LAWS AND EPA'S OFF-SITE DISPOSAL POLICY BEFORE THE MATERIAL IS SHIPPED. HAZARDOUS WASTE BOUND FOR OFF-SITE DISPOSAL MUST BE DISPOSED IN A HAZARDOUS WASTE DISPOSAL FACILITY. DANGEROUS WASTE WILL BE EVALUATED TO DETERMINE WHETHER IT IS ALSO A HAZARDOUS WASTE BEFORE SHIPMENT TO IDENTIFY THE TYPE OF FACILITY THAT IS APPROPRIATE. ASBESTOS-CONTAINING MATERIALS WILL BE DISPOSED AT A FACILITY OPERATING IN ACCORDANCE WITH FEDERAL NESHAPS REGULATIONS AND

APPLICABLE STATE LAW. WASTE MATERIALS THAT ARE ONLY SOLID WASTE (NOT HAZARDOUS OR DANGEROUS) MAY BE SHIPPED OFF SITE FOR DISPOSAL AT A SOLID WASTE FACILITY. ALL PACKAGING, MANIFESTING, AND SHIPPING OF MATERIALS WILL COMPLY WITH APPLICABLE FEDERAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) AND DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS FOR HAZARDOUS WASTES AND HAZARDOUS MATERIALS, AND WITH STATE REQUIREMENTS.

A NUMBER OF MATERIALS AT THE SITE MAY BE ADEQUATELY DECONTAMINATED, IF NECESSARY, AND THEN REUSED OR RECYCLED. STEEL AND WOOD MEETING DECONTAMINATION REQUIREMENTS CAN BE SALVAGED FOR REUSE. MATERIALS SUCH AS STEEL MAY BE DECONTAMINATED ON SITE AND THEN SHIPPED TO AN OFF-SITE FACILITY TO BE RECYCLED BY BATCH MELTING OR RESMELTING. THE LEAD AND RESIDUALS COLLECTED IN DUST AND WASTEWATER SLUDGE MAY ALSO BE SHIPPED TO AN OFF-SITE FACILITY TO BE RECYCLED.

DRAINAGE CONTROL

SURFACE WATER FROM AREAS ADJACENT TO THE SITE WILL BE DIVERTED TO PREVENT IT FROM ENTERING THE SITE BEFORE DEMOLITION ACTIVITIES BEGIN.

IN GENERAL, BASED ON A CONCEPTUAL DESIGN DESCRIBED IN THE FEASIBILITY STUDY FOR FINAL SITE CLEANUP, DIVERSION DITCHES AND CONDUITS WILL BE USED TO ENSURE PROPER DRAINAGE OF STORM WATER FROM THE SURROUNDING AREAS AND PREVENT THE SURFACE WATER FROM ENTERING THE ASARCO FACILITY. SURFACE WATER WILL BE DIVERTED TO STORM WATER OUTFALLS THAT DISCHARGE TO COMMENCEMENT BAY, AND THE DISCHARGE WILL BE MONITORED TO DETERMINE WHETHER IT MEETS WATER QUALITY STANDARDS. IF THE DISCHARGE EXCEEDS WATER QUALITY STANDARDS, THE SURFACE WATER WILL BE EVALUATED TO DETERMINE WHETHER ADDITIONAL BEST MANAGEMENT PRACTICES SHOULD BE IMPLEMENTED OR IF TREATMENT IS NECESSARY PRIOR TO DISCHARGE. THE EVALUATION OF ADDITIONAL CONTROLS WILL CONSIDER, AMONG OTHER THINGS, AKARTS, WATER QUALITY STANDARDS, BACKGROUND LEVELS IN AREA STORM WATER AND THE QUALITY OF RECEIVING WATERS.

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STATUTORY DETERMINATIONS

EPA'S PRIMARY RESPONSIBILITY UNDER ITS CERCLA AUTHORITIES IS TO ENSURE THAT REMEDIAL ACTIONS AT SUPERFUND SITES ARE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. IN ADDITION, SECTION 121 OF CERCLA ESTABLISHES SEVERAL OTHER STATUTORY REQUIREMENTS AND PREFERENCES. THESE SPECIFY THAT WHEN COMPLETE, FINAL REMEDIAL ACTIONS MUST COMPLY WITH APPLICABLE OR RELEVANT AND APPROPRIATE ENVIRONMENTAL STANDARDS UNLESS A STATUTORY WAIVER IS JUSTIFIED. THE SELECTED REMEDY MUST ALSO BE COST-EFFECTIVE AND UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE. FINALLY, THE STATUTE INCLUDES A PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT PERMANENTLY AND SIGNIFICANTLY REDUCE THE VOLUME, TOXICITY, OR MOBILITY OF HAZARDOUS WASTES AS THEIR PRINCIPAL ELEMENT.

THE INTERIM ACTION OPERABLE UNIT REMEDY SELECTED FOR THE ASARCO SMELTER SUPERFUND SITE IS CONSISTENT WITH STATUTORY REQUIREMENTS OF SECTION 121 OF CERCLA AND, TO THE EXTENT PRACTICABLE, THE NATIONAL CONTINGENCY PLAN. THIS INTERIM ACTION OPERABLE UNIT IS NOT INCONSISTENT WITH NOR WILL IT PRECLUDE IMPLEMENTATION OF ALTERNATIVES BEING CONSIDERED FOR THE FINAL REMEDY FOR THE SITE.

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THE SELECTED INTERIM REMEDY WILL PROTECT HUMAN HEALTH AND THE ENVIRONMENT BY DEMOLISHING AND DISMANTLING STRUCTURES AT THE SITE, AND TEMPORARILY STORING THE DEMOLITION DEBRIS ON SITE, IN A SAFE AND PROTECTIVE MANNER PENDING SELECTION OF A FINAL REMEDY FOR THIS OPERABLE UNIT.

THE INTERIM REMEDIAL ACTION WILL BE PROTECTIVE BY REMOVING THE THREAT OF AN UNCONTROLLED COLLAPSE OF THE SMELTER STACK, RESULTING IN RELEASES OF HAZARDOUS SUBSTANCES AND IN THE DANGER FROM FALLING DEBRIS. STUDIES PERFORMED FOR THE RI/FS AT THE SITE INDICATE THAT THE STACK IS UNSTABLE AND POSES THE POTENTIAL OF COLLAPSE. THE REMEDIAL ALTERNATIVE SELECTED CALLS FOR STACK DEMOLITION IN A MANNER PLANNED TO BE PROTECTIVE OF WORKERS AND NEARBY RESIDENTS. IN ADDITION, THIS INTERIM REMEDY WILL REMOVE MOST OF THE BUILDINGS AND STRUCTURES ON THE SITE SO THAT EVALUATION OF THE NATURE AND EXTENT OF CONTAMINATION AT THE SITE CAN BE COMPLETED IN PREPARATION FOR THE FINAL REMEDIAL ACTION.

THE SELECTED DEMOLITION ACTIVITIES WILL BE IMPLEMENTED IN A MANNER THAT IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. REMOVAL OF THE STACK WITH EXPLOSIVE CHARGES MAY RESULT IN SOME POTENTIAL FOR AIR EMISSIONS AND SHORT-TERM RISK. ENGINEERING CONTROLS THAT ARE PART OF THE REMEDY WILL BE IMPLEMENTED TO SUPPRESS EMISSIONS OF DUST AND CONTAMINANTS INTO THE AIR DUE TO DEMOLITION ACTIVITIES. IT IS EXPECTED THAT THE MAGNITUDE OF THESE RISKS AND SPECIFIC CONTROL METHODS WILL BE EVALUATED IN GREATER DETAIL DURING THE REMEDIAL DESIGN.

EXTENSIVE HEALTH AND SAFETY PLANS WILL BE PREPARED TO ENSURE THE SAFETY OF AND MINIMIZE EXPOSURES TO THE RESIDENTS OF THE SURROUNDING NEIGHBORHOODS AND ON-SITE WORKERS, AND TO MITIGATE RELEASES TO THE ENVIRONMENT, TO THE MAXIMUM EXTENT PRACTICABLE. WORKERS WILL FOLLOW STRICT GUIDELINES MEETING FEDERAL AND STATE OCCUPATIONAL SAFETY AND HEALTH STANDARDS TO SAFEGUARD AGAINST DEMOLITION ACCIDENTS AND FROM EXPOSURE TO

AIRBORNE CONTAMINANTS. (3)

(3) REGULATIONS UNDER OSHA APPLY TO THE CONDUCT OF THE REMEDIAL ACTION AS IT INVOLVES WORKERS AT THE SITE. DURING IMPLEMENTATION OF RESPONSE ACTIONS, CONTROL MEASURES WILL ENSURE THAT WORKER EXPOSURES DO NOT EXCEED ANY THRESHOLD LIMIT VALUES ESTABLISHED FOR SUBSTANCES AT THE SITE. TRAINING OF ON-SITE WORKERS WILL MEET THE REQUIREMENTS SPECIFIED IN 29 CFR 1910.120. REMEDIAL ACTIVITIES WILL EMPLOY THE SPECIFIED TYPE OF SAFETY EQUIPMENT AND PROCEDURES. DEMOLITION ACTIVITIES WILL BE CONDUCTED IN CONFORMANCE WITH SUBPART T OF 29 CFR 1910 (DEMOLITION) AND EXPLOSIVE DEMOLITION OF THE STACK WILL COMPLY WITH SUBPART U OF 29 CFR 1910 (BLASTING AND USE OF EXPLOSIVES). THE REMEDIAL ACTIVITIES WILL ALSO COMPLY WITH APPLICABLE STATE OCCUPATIONAL SAFETY AND HEALTH REQUIREMENTS.

RESIDENTS WITHIN 1,000 FEET OF THE SMELTER STACK WILL BE EVACUATED, IF THEY CHOOSE, DURING STACK DEMOLITION TO PREVENT ANY EXPOSURE TO AIRBORNE CONTAMINANTS AND DEBRIS. AIR SAMPLING AND ANALYSIS WILL BE CONDUCTED DURING REMEDIAL ACTIVITIES TO MONITOR AIR QUALITY AND ENSURE THAT THE MEASURES ARE EFFECTIVE. SURFACE WATER CONTROL MEASURES WILL BE IMPLEMENTED TO COLLECT, TO THE EXTENT PRACTICABLE, CONTAMINATED WATER GENERATED BY DUST SUPPRESSION METHODS TO PREVENT RELEASES TO COMMENCEMENT BAY AND THE ENVIRONMENT.

SIMILAR PROTECTIVE MEASURES WILL BE IMPLEMENTED DURING THE DISMANTLING AND DEMOLITION OF BUILDINGS ON THE SITE. THROUGHOUT THE REMEDIAL ACTION, ACTIONS TO CONTROL SURFACE WATER MOVEMENT WILL BE TAKEN, AS TECHNICALLY FEASIBLE, DURING AND AFTER THE DEMOLITION TO PREVENT THE MIGRATION OFF SITE OF CONTAMINATED DEMOLITION DEBRIS AND SURFACE SOILS. ANY STRUCTURES THAT ARE NOT DEMOLISHED OR DISMANTLED WILL BE SAMPLED AND DECONTAMINATED AS NECESSARY TO ENSURE THEIR CONTINUED PRESENCE DOES NOT POSE UNACCEPTABLE RISKS PENDING SELECTION AND IMPLEMENTATION OF THE FINAL REMEDY FOR THE SMELTER SITE.

MATERIALS GENERATED BY THE DEMOLITION AND DISMANTLING ACTIONS WILL BE STORED IN THE FINE ORE BINS BUILDING ON SITE IN A MANNER THAT WILL PREVENT THE RELEASE OF HAZARDOUS AND DANGEROUS WASTES INTO THE ENVIRONMENT. SOME MATERIALS FROM THE DEMOLITION AND DISMANTLING ACTIVITIES MAY BE TRANSPORTED FROM THE SITE FOR OFF SITE USE OR DISPOSAL. MATERIALS THAT ARE NOT HAZARDOUS OR DANGEROUS WASTES, OR THAT CAN BE DECONTAMINATED, MAY BE SALVAGED FOR REUSE. DECONTAMINATION PROCEDURES WILL BE FOLLOWED TO ENSURE THE MATERIALS ARE NOT HAZARDOUS OR DANGEROUS. THE NEED FOR DECONTAMINATION AND THE EFFECTIVENESS OF THE DECONTAMINATION PROCEDURES WILL BE VERIFIED BY SAMPLING AND ANALYSIS BEFORE FINAL DISPOSITION.

STORM WATER FROM AREAS NEAR THE SITE WILL BE DIVERTED AWAY FROM THE SITE TO REDUCE THE TRANSPORT OF CONTAMINANTS FROM ON-SITE SURFACE SOILS TO COMMENCEMENT BAY AND TO GROUND WATER.

COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

THE SELECTED INTERIM REMEDIAL ACTION WILL MEET OR ATTAIN ALL FEDERAL AND MORE STRINGENT STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) THAT HAVE BEEN IDENTIFIED. NO WAIVER OF ANY ARAR IS BEING SOUGHT OR INVOKED FOR ANY COMPONENT OF THE INTERIM REMEDY. NO ARARS FOR CLEANUP OF GROUNDWATER, SOIL, OR SLAG ARE INCLUDED IN THIS ANALYSIS, BUT WILL BE EVALUATED AS PART OF THE FINAL REMEDY FOR THIS SITE. THE LAWS AND REGULATIONS OF CONCERN THAT ARE ACTION-, CHEMICAL-, AND LOCATION-SPECIFIC INCLUDE:

ACTION-SPECIFIC ARARS.

HAZARDOUS AND DANGEROUS WASTES - ON SITE.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 42 USC S6901 ET SEQ.; RCRA REGULATIONS FOR HAZARDOUS WASTE FACILITIES, 40 CFR PART 264; RCRA LAND DISPOSAL TREATMENT REGULATIONS, 40 CFR PART 268; HAZARDOUS WASTE MANAGEMENT ACT, RCW 70.105; WASHINGTON STATE DANGEROUS WASTE REGULATIONS, WAC 173-303.

RCRA, AS AMENDED, AND IMPLEMENTING FEDERAL REGULATIONS CREATE A FEDERAL PROGRAM FOR MANAGING SOLID AND HAZARDOUS WASTES. WASHINGTON STATE HAS ALSO ENACTED LEGISLATION AND IMPLEMENTING REGULATIONS THAT ADDRESS THE MANAGEMENT OF SOLID, HAZARDOUS, AND DANGEROUS WASTES. RESPONSIBILITY FOR IMPLEMENTING MOST OF THE FEDERAL REQUIREMENTS HAVE BEEN DELEGATED TO THE STATE PROGRAM, SO STATE DANGEROUS WASTE REGULATIONS GENERALLY WILL BE THE ARARS FOR THIS REMEDIAL ACTION.

MATERIALS FROM THE DEMOLITION OR DISMANTLEMENT OF STRUCTURES WILL BE ANALYZED TO DETERMINE WHETHER THEY ARE A HAZARDOUS WASTE, INCLUDING WHETHER THEY EXHIBIT THE TOXICITY CHARACTERISTIC LEACHATE PROCEDURE (TCLP) CHARACTERISTIC OF A RCRA HAZARDOUS WASTE. IN ADDITION, MATERIALS WILL BE ANALYZED TO DETERMINE WHETHER THEY ARE DANGEROUS WASTES UNDER STATE REQUIREMENTS. SOME WASTES CONTAINING GREATER THAN 100 PPM ARSENIC ARE CURRENTLY REGULATED AS DANGEROUS WASTES BY WASHINGTON (4). MATERIALS THAT MEET THE DEFINITIONS OF HAZARDOUS WASTE (FEDERAL) OR DANGEROUS WASTE (STATE) THAT ARE GENERATED BY THE DEMOLITION AND DISMANTLING OF SITE STRUCTURES AND REMAIN ON SITE WILL BE TEMPORARILY STORED ON SITE IN AREAS THAT CONFORM WITH FEDERAL AND STATE HAZARDOUS WASTE STORAGE REQUIREMENTS FOR WASTE PILES (5). SPECIFICALLY, THE WASTE PILE REGULATIONS AT WAC 173-303-660 PROVIDE THAT A WASTE PILE MAY BE LOCATED INSIDE OR UNDER A STRUCTURE THAT PROVIDES PROTECTION FROM PRECIPITATION SO THAT NEITHER RUN-OFF NOR LEACHATE IS GENERATED, PROVIDED THAT LIQUIDS OR MATERIALS

CONTAINING FREE LIQUIDS ARE NOT PLACED IN THE PILE AND OTHER SPECIFIED CONDITIONS ARE MET. THE FEDERAL AND STATE HAZARDOUS WASTE REGULATIONS ALSO SPECIFY FACILITY MANAGEMENT PRACTICES THAT WILL ESTABLISH OPERATING PROCEDURES FOR THE SITE DURING STORAGE OF THE WASTES.

(4) UNDER STATE REGULATIONS, WASTES CONTAINING GREATER THAN 0.01 PERCENT OF THE INTERNATIONAL AGENCY FOR RESEARCH OF CANCER (IARC) CARCINOGEN ARE REGULATED AS DANGEROUS WASTE.

(5) THE FINE ORE BINS BUILDING IS THE LOCATION WITHIN THE AOC AT WHICH THE DEMOLITION DEBRIS THAT IS HAZARDOUS OR DANGEROUS WASTE WILL BE CONSOLIDATED. THE FINE ORE BINS ARE NOT CURRENTLY REGULATED AS WASTE PILES UNDER 40 CFR S265.250 ET SEQ. OR WAC 173.303.660. HOWEVER, THE REQUIREMENTS FOR CONSTRUCTION OF WASTE PILES ARE RELEVANT AND APPROPRIATE TO THE FINE ORE BINS BUILDING IN ORDER TO PROVIDE PROTECTION FROM PRECIPITATION SO THAT NEITHER RUN-OFF NOR LEACHATE IS GENERATED.

FEDERAL AND STATE LAND DISPOSAL RESTRICTIONS (LDR) WILL NOT APPLY TO THE CONSOLIDATION OF WASTE WITHIN THE SAME AREA OF CONTAMINATION (AOC). THE AOC AT THIS SITE INCLUDES THE ENTIRE SMELTER FACILITY BECAUSE CONTAMINATION IS CONTINUOUS THROUGHOUT THE FACILITY.

HAZARDOUS AND DANGEROUS WASTE - OFF-SITE DISPOSAL.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA), 42 USC S9621(D)(3); RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 42 USC S6901 ET SEQ.; RCRA REGULATIONS FOR TRANSPORTERS OF HAZARDOUS WASTE FACILITIES, 40 CFR PARTS 262 AND 263; RCRA LAND DISPOSAL TREATMENT REGULATIONS, 40 CFR PART 268; DEPARTMENT OF TRANSPORTATION RULES (DOT) FOR TRANSPORTATION OF HAZARDOUS MATERIALS, 49 CFR PARTS 107, 171.1-172.558; HAZARDOUS WASTE MANAGEMENT ACT, RCW 70.105; WASHINGTON STATE DANGEROUS WASTE REGULATIONS, WAC 173-303.

ACTIONS TO TRANSPORT HAZARDOUS, DANGEROUS, OR SOLID WASTE OFF-SITE FOR DISPOSAL WILL COMPLY WITH SEC. 121(D)(3) OF CERCLA AND APPLICABLE GUIDANCE, WHICH PROVIDES, IN PART, THAT HAZARDOUS SUBSTANCES FROM SUPERFUND SITES MAY BE ONLY TRANSFERRED FOR OFF SITE DISPOSAL TO A FACILITY THAT IS OPERATING IN COMPLIANCE WITH RCRA OR OTHER APPLICABLE LAWS.

ALL HAZARDOUS AND DANGEROUS WASTES THAT ARE TO BE SHIPPED OFF SITE FOR LAND DISPOSAL WILL BE EVALUATED TO ESTABLISH THAT THE FEDERAL AND STATE LAND DISPOSAL RESTRICTIONS DO NOT PRECLUDE SUCH OFF-SITE DISPOSAL. TO THE EXTENT LDRS APPLY TO THE MATERIALS SHIPPED OFF SITE FOR DISPOSAL THAT ARE NOT COVERED BY A NATIONAL CAPACITY VARIANCE FOR DEBRIS, THE MATERIALS EITHER WILL COMPLY WITH THE APPLICABLE TREATABILITY STANDARD OR WILL BE THE SUBJECT OF A TREATABILITY VARIANCE.

ALL HAZARDOUS AND DANGEROUS WASTES THAT ARE TO BE SHIPPED OFF-SITE FOR DISPOSAL WILL COMPLY WITH ALL DOT AND FEDERAL AND STATE HAZARDOUS/DANGEROUS WASTE REQUIREMENTS FOR PACKAGING, LABELING, MANIFESTING, RECORDKEEPING, AND TRANSPORTING SUCH WASTE MATERIALS.

AIR POLLUTION CONTROLS - CONTROL OF DUST AND PARTICULATES

CLEAN AIR ACT (CAA), 42 USC SS7409, 7601; NATION AMBIENT AIR QUALITY STANDARDS (NAAQS), 40 CFR PART 50; WASHINGTON STATE AIR GENERAL REGULATIONS FOR AIR POLLUTION SOURCES, WAC 173-400; AMBIENT AIR QUALITY STANDARDS FOR PARTICULATE MATTER, WAC 173-470. PSAPCA, REGULATION 1, ARTICLES 3, 9 AND 10.

CONCENTRATIONS OF PARTICULATE MATTER AND DUST EMISSIONS FROM SITE PREPARATION AND DEMOLITION ACTIVITIES WILL BE DESIGNED TO MEET THE REQUIREMENTS OF THE CLEAN AIR ACT AND APPLICABLE STATE REQUIREMENTS. PARTICULATE AND DUST EMISSIONS WILL BE CONTROLLED TO MEET THE RELEVANT AND APPROPRIATE MAXIMUM PRIMARY AND SECONDARY 24-HOUR CONCENTRATION LIMITS UNDER THE NAAQS.

CHEMICAL-SPECIFIC ARARS.

AIR POLLUTION CONTROLS - WOOD INCINERATION.

CLEAN AIR ACT (CAA), 42 USC SS7409, 7601; NATION AMBIENT AIR QUALITY STANDARDS (NAAQS), 40 CFR PART 50; WASHINGTON STATE AIR GENERAL REGULATIONS FOR AIR POLLUTION SOURCES, WAC 173-303, WAC 173-400, WAC 173-434, WAC 173-470; PUGET SOUND AIR POLLUTION CONTROL AGENCY (PSAPCA) REGULATION I S9.09 AND PSAPCA BACT POLICY.

WOOD DEBRIS FROM SITE DEMOLITION CAN BE INCINERATED IN AN EXISTING CONVERTER IF SUCH DEBRIS IS NEITHER A HAZARDOUS NOR DANGEROUS WASTE. ALTHOUGH UNDER CERCLA S121 (E), PERMITS ARE NOT REQUIRED FOR ACTIVITIES CONDUCTED ENTIRELY ON SITE, PSAPCA HAS ISSUED A PERMIT TO ASARCO REGULATING PERFORMANCE OF THE CONVERTER. EPA CAN AUTHORIZE ASARCO TO CONDUCT A REMEDIAL ACTION TO FULLY COMPLY WITH THIS PERMIT UNDER THE AUTHORITY OF CERCLA S122 (E)(6). IN THE EVENT EPA DETERMINES, HOWEVER, THAT IT IS NECESSARY TO WITHDRAW ITS AUTHORIZATION, ANY ACTIVITY INVOLVING THE CONVERTER MUST COMPLY WITH SUBSTANTIVE REQUIREMENTS UNDER FEDERAL OR STATE LAWS AND REGULATIONS INCLUDING THOSE FOR EMISSIONS OF PARTICULATES, ARSENIC, SULFUR DIOXIDE,

HYDROGEN CHLORIDE AND DISPOSAL OF INCINERATOR ASH. WOOD THAT IS CONTAMINATED BUT THAT CAN BE DECONTAMINATED TO ACCEPTABLE LEVELS PRIOR TO BURNING MAY ALSO QUALIFY FOR INCINERATION. OTHER MATERIALS THAT ARE CONSIDERED HAZARDOUS OR DANGEROUS WASTE WILL NOT BE BURNED IN THE CONVERTER WHICH IS NOT DESIGNED TO COMPLY WITH THE HAZARDOUS WASTE INCINERATOR REQUIREMENTS OF 40 CFR SUBPART O.

SURFACE WATER.

CLEAN WATER ACT (CWA), 33 USC S1251 ET SEQ.; NATIONAL PERMIT DISCHARGE ELIMINATION SYSTEM (NPDES), 40 CFR PARTS 122 AND 131; WASHINGTON STATE WATER POLLUTION CONTROL ACT, RCW 90-48; NPDES PERMIT PROGRAM REQUIREMENTS, WAC 173-220; STATE WATER QUALITY STANDARDS, WAC 173-201, STATE WASTE DISCHARGE PROGRAM, WAC 173-216; RCW 90-54, WATER RESOURCES ACT 1971.

DISCHARGES TO SURFACE WATERS OF THE STATE ARE REGULATED UNDER THE STATE WASTE DISCHARGE PERMIT PROGRAM (WAC 173-216) UNLESS THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT PROGRAM (NPDES) (WAC 173-220) APPLIES. BOTH PROGRAMS REQUIRE TREATMENT BY ALL KNOWN AVAILABLE, AND REASONABLE TECHNOLOGY (AKART) IF THE CONTAMINANT LEVELS EXCEED PERMITTED LEVELS WHICH ARE GENERALLY WATER QUALITY STANDARDS. FOR STORM WATER DISCHARGES, THE STATE CONSIDERS BEST MANAGEMENT PRACTICES (BMP) TO CONSTITUTE AKARTS. SOURCE CONTROL BMPS INCLUDE MEASURES TO PREVENT THE STORM WATER FROM BEING CONTAMINATED IN THE FIRST PLACE.

SURFACE WATER, COMPOSED OF STORM WATER RUNOFF COMING FROM AREAS NEAR THE SITE WILL BE DIVERTED SO THAT IT NO LONGER CROSSES THE SITE. THE SURFACE WATER WILL BE DIVERTED FROM CONTAMINATED SURFACES AT THE SITE, THUS USING BMP TO MEET AKARTS. THE DIVERTED WATER WILL BE MONITORED AT THE POINT OF DISCHARGE FROM THE POINT SOURCE CREATED BY THE SURFACE WATER DIVERSION TO DETERMINE COMPLIANCE WITH WATER QUALITY STANDARDS.

DURING THE DEMOLITION ACTIVITIES, CONTROL MEASURES WILL BE TAKEN TO MINIMIZE SURFACE WATER CONTACT WITH CONTAMINATED SOILS AND DEMOLITION DEBRIS THAT COULD BE DISCHARGED TO SURFACE WATERS OFF SITE. PRECIPITATION FROM THE DEMOLITION AREA AND WATER GENERATED FROM THE DEMOLITION ACTIVITIES WILL BE COLLECTED AND ROUTED THROUGH AN EPA-APPROVED EVAPORATOR SYSTEM. SURFACE WATER DISCHARGE POINTS FROM THE SITE WILL BE MONITORED TO ENSURE THAT DISCHARGES TO COMMENCEMENT BAY DO NOT EXCEED THE SUBSTANTIVE DISCHARGE LIMITS ESTABLISHED BY THE NPDES PERMIT PROGRAM WHICH WILL REDUCE FURTHER CONTAMINANT LOADING IN THE BAY.

ASBESTOS.

ASBESTOS NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS (NESHAP), 40 CFR PART 763; WASHINGTON DANGEROUS WASTE REGULATIONS, WAC 173-303; WASHINGTON LABOR AND INDUSTRIES ASBESTOS REMOVAL REGULATIONS, WAC 296-65.

IF FRIABLE ASBESTOS MATERIALS, AS DEFINED BY THE ASBESTOS NESHAP, ARE FOUND IN BUILDINGS TO BE DEMOLISHED OR DISMANTLED, THE REMOVAL AND DISPOSAL ACTIVITIES WILL BE CONDUCTED IN COMPLIANCE WITH THE APPLICABLE FEDERAL AND MORE STRINGENT STATE REQUIREMENTS FOR EMISSION LIMITS AND OCCUPATIONAL SAFETY AND HEALTH STANDARDS. WASHINGTON OCCUPATIONAL SAFETY AND HEALTH REQUIREMENTS, WHICH SUPPLEMENT THE FEDERAL REGULATIONS WITH TRAINING AND CERTIFICATION REQUIREMENTS, WOULD ALSO BE MET. STATE DANGEROUS WASTE DISPOSAL REQUIREMENTS MAY APPLY TO ASBESTOS CONTAINING WASTE MATERIAL THAT CONTAINS MORE THAN ONE PERCENT ASBESTOS BY WEIGHT.

LOCATION-SPECIFIC ARARS.

SHORELINE MANAGEMENT.

WASHINGTON SHORELINE MANAGEMENT ACT (SMA), RCW 90.58; WASHINGTON DEPARTMENT OF ECOLOGY INTERPRETIVE RULES, WAC 173-14 THROUGH 173-20; LOCAL SHORELINE MANAGEMENT MASTER PROGRAM THAT HAS BEEN APPROVED BY THE STATE.

DEVELOPMENT ACTIVITIES CONDUCTED ON THE SITE IN AREAS THAT ARE DEFINED AS SHORELINES (ALL AREAS 200 FEET LANDWARD OF ORDINARY HIGH WATER, AND ADJACENT WETLANDS) WILL CONFORM WITH THE SUBSTANTIVE REQUIREMENTS OF THE SMA PURSUANT TO THE CURRENT MASTER PLAN, AS APPROVED BY THE STATE (WAC 173.19.3514).

WETLANDS PROTECTION AND FLOODPLAINS.

STATEMENT OF PROCEDURES ON FLOODPLAIN MANAGEMENT AND WETLANDS PROTECTION, 40 CFR PART 6, APPENDIX A.

IT APPEARS AT THIS TIME THAT THE INTERIM REMEDIAL ACTION WILL NOT IMPACT FLOODPLAINS OR WETLANDS. HOWEVER, INTERIM ACTIONS TAKEN AT THE SITE WILL INCLUDE PLANS FOR EVALUATING WHETHER THERE ARE ISSUES AND IMPACTS INVOLVING FLOODPLAINS AND WETLANDS. 40 CFR PART 6 DESCRIBES HOW EPA WILL COMPLY WITH THE EXECUTIVE ORDERS 11988 AND 11990 ON FLOODPLAIN MANAGEMENT AND PROTECTION OF WETLANDS, RESPECTIVELY.

ENDANGERED SPECIES.

ENDANGERED SPECIES ACT OF 1973, AS AMENDED, 16 USC 1531.

INTERIM ACTIONS AUTHORIZED ON SITE WILL NOT LIKELY JEOPARDIZE THE CONTINUED EXISTENCE OF ENDANGERED/THREATENED SPECIES OR ADVERSELY MODIFY OR DESTROY CRITICAL HABITATS.

CULTURAL RESOURCES.

NATIONAL HISTORIC PRESERVATION ACT, 16 USC 470 AND IMPLEMENTING REGULATIONS AT 36 CFR PART 60.4.

UNDER THE NATIONAL HISTORIC PRESERVATION ACT, FEDERAL AGENCIES MUST TAKE INTO ACCOUNT POSSIBLE EFFECTS OF THEIR ACTIONS ON PROPERTIES ON OR ELIGIBLE FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES (NRHP). THE SITE IS NOT PRESENTLY LISTED ON THE NRHP. PRIOR TO UNDERTAKING DEMOLITION ACTIVITIES AT THE SITE, EPA WILL DETERMINE WHETHER THE SITE IS ELIGIBLE FOR THE NRHP AND WILL CONSIDER DATA RECOVERY AS A MITIGATION MEASURE IF APPROPRIATE.

OTHER FEDERAL CRITERIA, ADVISORIES AND GUIDANCE TO BE CONSIDERED.

EPA GUIDANCE TITLED "GUIDE FOR DECONTAMINATING BUILDINGS, STRUCTURES, AND EQUIPMENT AT SUPERFUND SITES," EPA/600/2-85/028, AND OTHER APPROPRIATE FEDERAL GUIDANCE DOCUMENTS WILL BE CONSIDERED IN PLANNING AND IMPLEMENTING DECONTAMINATION ACTIVITIES. BUILDINGS, STRUCTURES AND EQUIPMENT AT THE SITE WILL BE EVALUATED TO DETERMINE WHETHER DECONTAMINATION IS APPROPRIATE AND FEASIBLE.

GUIDELINES BY THE US BUREAU OF MINES TITLED "STRUCTURE RESPONSES AND DAMAGE PRODUCED BY GROUND VIBRATION FROM SURFACE MINING BLASTING," REPORT OF INVESTIGATION 8507 (1980), AND "STRUCTURE RESPONSES AND DAMAGE PRODUCED BY AIR BLASTS FROM SURFACE MINING," REPORT OF INVESTIGATION 8485 (1980), AND REGULATIONS BY THE OFFICE OF SURFACE MINING AT 30 CFR S816.67. THESE DOCUMENTS AND REGULATIONS, WHICH APPLY TO BLASTING DURING MINING ACTIVITIES, WILL BE CONSIDERED IN DESIGNING AND MONITORING EXPLOSIVE DEMOLITION OF THE STACK.

COST-EFFECTIVENESS

THE SELECTED INTERIM REMEDIAL ACTION IS COST-EFFECTIVE BECAUSE IT IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINS ARARS AND ACHIEVES AN APPROPRIATE BALANCE OF LONG-TERM EFFECTIVENESS AND PERMANENCE, THE REDUCTION OF TOXICITY, MOBILITY, OR VOLUME AND SHORT-TERM EFFECTIVENESS; I.E., THE COSTS OF THE REMEDY ARE PROPORTIONAL TO ITS OVERALL EFFECTIVENESS.

THE COST OF DEMOLISHING AND DISMANTLING BUILDINGS AND STRUCTURES OTHER THAN THE STACK BY CONVENTIONAL METHODS IS ESTIMATED TO COST $9,192,000, INCLUDING THE COST OF SAMPLING AND ANALYSIS OF MATERIALS FOR DISPOSAL OR REUSE, AND ENVIRONMENTAL MONITORING DURING DEMOLITION OPERATIONS. DEMOLITION OF THE STACK, INCLUDING ENVIRONMENTAL MONITORING, IS ESTIMATED TO COST $720,500.

COST ESTIMATES FOR DISPOSAL OF MATERIALS GENERATED BY THE DEMOLITION ACTIVITIES VARY DEPENDING ON THE CHOICE OF DISPOSAL METHOD. THE COST OF MODIFYING THE ON-SITE INCINERATOR TO MEET AIR POLLUTION CONTROL REQUIREMENTS AND TO INCINERATE WOOD DEBRIS IS ESTIMATED AT $1,777,000. THE EFFECTIVENESS OF PERMANENT DISPOSAL OF THE WOOD DEBRIS BY ON-SITE INCINERATION IS PROPORTIONAL TO ITS COSTS. WOOD AND OTHER MATERIALS FROM THE SITE CAN BE DECONTAMINATED AND MAY BE SALVAGED FOR REUSE. THE NON-WOOD DEBRIS THAT IS NOT SALVAGED WILL BE STORED TEMPORARILY ON-SITE IN THE FINE ORE BINS BUILDING. ASARCO ESTIMATES THE COST OF TRANSPORTING AND STORAGE OF DEBRIS FROM THE STACK DEMOLITION IN THE FINE ORE BINS AT $260,000. PENDING THE SELECTION OF A FINAL REMEDY FOR DISPOSAL OF THE DEMOLITION WASTES, THE TEMPORARY STORAGE ON SITE IN THE FINE ORE BINS BUILDING IS COST-EFFECTIVE.

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THE COST OF DIVERTING OFF-PROPERTY SURFACE WATERS TO EXISTING DRAINAGE SYSTEMS OF THE CITY OF TACOMA AND THE TOWN OF RUSTON IS ESTIMATED TO BE UP TO $2,891,600, BUT MAY ACTUALLY BE LOWER. IMPLEMENTATION OF THESE MEASURES WOULD BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. THE ESTIMATED TOTAL COST OF IMPLEMENTING THESE MEASURES RANGES FROM $11,764,500 TO $38,686,000.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES (OR RESOURCE RECOVERY TECHNOLOGIES) TO THE MAXIMUM EXTENT PRACTICABLE

THE SELECTED INTERIM REMEDIAL ACTION TO DEMOLISH STRUCTURES AT THE SITE DOES NOT PROVIDE PERMANENT SOLUTIONS TO ALL CONTAMINATION PROBLEMS AT THE SITE. HOWEVER, THERE ARE SEVERAL FEATURES OF THIS SELECTED REMEDY THAT PROVIDE A PERMANENT SOLUTION. THE PRIMARY PURPOSE OF THIS ROD IS TO START AND SAFELY CLEAR STRUCTURES FROM THE SITE IN ANTICIPATION OF THE PERMANENT REMEDIAL ACTION THAT WILL BE SUBSEQUENTLY SELECTED. EPA HAS DETERMINED THAT THE INTERIM REMEDIAL ACTION SELECTED IN THIS ROD IS NOT INCONSISTENT WITH NOR WILL IT PRECLUDE IMPLEMENTATION OF THE FINAL REMEDY.

WHILE THE SELECTED REMEDY IS AN INTERIM MEASURE, THE REMEDY EMPLOYS PERMANENT SOLUTIONS IN SEVERAL WAYS. DEMOLITION OF THE STACK WILL PERMANENTLY ELIMINATE THE THREAT OF AN UNCONTROLLED COLLAPSE. THE REMEDY WILL PERMANENTLY REMOVE MOST STRUCTURES ON THE SITE, WHICH WILL ENABLE THE AGENCY TO PLAN THE FINAL REMEDY. IN ADDITION, THIS REMEDY PROVIDES FOR FINAL DISPOSITION OF MANY MATERIALS FROM THE SITE, TO INCLUDE SALVAGING

REUSABLE MATERIALS AND INCINERATING MOST OF THE WOOD DEBRIS THAT IS NOT A HAZARDOUS OR DANGEROUS WASTE. THE REMAINING DEBRIS WILL BE STORED ON SITE UNTIL SELECTION OF A FINAL DISPOSAL REMEDY IN A SUBSEQUENT ROD.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

DEMOLITION AND TEMPORARY STORAGE ON SITE PROVIDES AN INTERIM SOLUTION TO CONTAMINATION PROBLEMS AT THE SITE PENDING SELECTION OF A FINAL, PERMANENT REMEDY. BECAUSE THIS ACTION DOES NOT CONSTITUTE THE FINAL REMEDY FOR THIS OPERABLE UNIT, THE STATUTORY PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME AS A PRINCIPAL ELEMENT WILL BE ADDRESSED BY THE FINAL DECISION DOCUMENT FOR THIS SITE. SUBSEQUENT ACTIONS ARE PLANNED TO ADDRESS FULLY THE PRINCIPAL THREATS POSED BY THIS SITE.